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Descriptions of new Species of Butterflies of the Genus Catasticta *in the British Museum.* By Arthur G. Butler, Ph.D. &c.

The following species have been in the Museum without names for many years; and, as I find that they are unquestionably not described, I propose to name them now.

Ag - Entomology

Catasticta sinapina, sp. n.

♂. Resembles *C. nimbice* on the upper surface, excepting that the central ochreous band is more distinctly divided by the veins, the spots composing it on the primaries smaller; the postmedian series consists of larger spots, and the marginal spots on the secondaries are larger; the latter wings are more elongated at anal angle; the under surface is quite unique in colouring, the ground-colour mustard-yellow, and the veins and markings purplish brown; the pattern corresponds almost exactly with that on the under surface of *C. susiana.*

Expanse of wings 56 millim.

Pucartambo, Peru (*Whitely*).

We purchased this insect in 1872, but at that time I was not in a position to decide whether or no it was undescribed; it should stand near *C. susiana.*

Catasticta reducta, sp. n.

Euterpe colla, Hewitson (not Doubleday), in Coll. Hewits.

♂. Pattern of both surfaces as in *C. anaitis*, but this species is much smaller and has all the markings of the upper surface ochreous, irrorated with purplish brown; the nervures are much more broadly blackish; the secondaries have a marginal series of small white spots: the macular bands on the under surface of the primaries are clear ochreous, those towards apex being more falciform.

Expanse of wings 52 millim.

Ecuador (*Buckley*).

Local form *boliviana.*

Differs from the typical form in having all the markings of the upper surface clear ochreous, with scarcely a trace of dark irroration.

Expanse of wings 51–54 millim.

Bolivia.

The above species is represented in Hewitson's collection by seven examples—four from Ecuador and three from Bolivia—and incorrectly identified by him as *Euterpe colla.* In the same drawer an example of Doubleday's species is associated with a specimen of *C. zancle*, and wrongly identified as *C. nimbice.*

Catasticta strigosa, sp. n.

♂. Form, size, and general aspect above of *C. hebra* deep olive-brown, the lower third of the discoidal cell of primaries sparsely irrorated with sulphur-yellow scales, the cell surrounded by a series of longitudinal tapering rays, sulphur-yellow irrorated with brown, the pointed extremities of the first six of these rays being cut off by a stripe of the ground-colour from apical fourth of costa to external angle: secondaries sulphur-yellow, irrorated with brown, but with the nervures and a broad external border which emits pyramidal spurs along the nervures deep olive-brown; three elongated clear yellow spots terminating the second to fourth internervular streaks: under surface similar to *C. ctemene* ♂, but the yellow patch on the primaries broken up into narrow streaks by the broad brown borders to the nervures.

Expanse of wings 67 millim.

Pucartambo, Peru (*Whitely*).

Catasticta straminea, sp. n.

Allied to *C. eurigania* from Ecuador, but the upper surface deep buff or straw-yellow, with all the veins black; three elongated spots placed obliquely on the black apical area, the middle one large, the others small: secondaries with the outer border broadly black, with a deep sinus in the radial interspace.

Expanse of wings 47 millim.

Hab. ——?

Two specimens of this species stood in Hewitson's collection with two of his *C. eurigania* from Ecuador and two of *C. notha* from Bolivia, the label "*eurigania*" standing below the three species. Unfortunately Hewitson neglected to label the present species with its locality.

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Jan 1896

ON A COLLECTION

OF

BUTTERFLIES

OBTAINED BY

MR. RICHARD CRAWSHAY

IN

NYASA-LAND,

BETWEEN THE MONTHS OF JANUARY AND APRIL 1895.

BY

ARTHUR G. BUTLER, PH.D., F.L.S., ETC.

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON,
January 14, 1896.]

On a Collection of Butterflies obtained by Mr. Richard Crawshay in Nyasa-land, between the Months of January and April 1895. By Arthur G. Butler, Ph.D., F.L.S., &c.

(Plate VI.)

Many of the specimens in the present consignment from Mr. Crawshay, who remains for the present at his station, Deep Bay, on the west coast of Lake Nyasa[1], were obtained at considerable altitudes, and therefore are of special interest. The only surprising thing is that comparatively few of the species prove to be undescribed, though some of the novelties which are in the collection are of exceptional interest, such as a *Neptis* representing a new section in the genus, a pure white species of *Hyreus*, a *Mylothris* which marvellously resembles *Phrissura lasti*, and a very beautiful new species of *Melittia*. Nine species altogether are described as new.

The novelties are, however, not the only species of interest in this collection, for it contains the rare Satyrid *Aphysoneuria pigmentaria*, previously unrepresented in the Museum; a variety of *Acræa johnstoni*, which we required; the female of *Acræa vinidia*, var. *tenella*; specimens of *A. anacreon* tending to link it to *A. bomba* (a seasonal form of it); a second example of *A. periphanes* (seasonal form of *A. guillemei*); examples of *Alæna nyassæ*, proving that I was correct in speaking of the buff form as a variety; specimens of *Catochrysops glauca*, a very beautiful Lycænid new to the Museum series; the true female of *Castalius hintza*, proving my *C. resplendens* to be a distinct species; specimens of *Durbania hildegarda*, of which we previously only possessed one poor example; *Larinopoda peucetia*, of which the type alone existed in the Hewitson cabinets; examples of *Uranothauma crawshayi* in both sexes; the female of *Epamera sidus*, new to the collection; both sexes of *Teracolus opalescens*; the male of *T. mutans*, which was previously unknown; variations of *Cyclopides quadrisignatus*; the female of the rare Hesperid *Kedestes capenas*; specimens of *Padraona watsoni*, linking that species to *P. zeno*; and the male of *Icterodes roseovittata*, which was previously undescribed.

As with other collections obtained by Mr. Crawshay, most of the specimens are in good condition, and therefore easily identified: with the exception of two or three specimens (the descriptive notes of which may have been lost when they were mounted, or may never have been written on the envelopes) all were carefully labelled with the exact locality, date of capture, a popular name descriptive of the insect, and any other note of interest which occurred to Mr. Crawshay at the time.

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[1] About 10° 50′ S. lat. See map attached to Sir H. H. Johnston's paper, Geogr. Journ. v. p. 193 (1895).

The following is a list of the species in this consignment:—

RHOPALOCERA.

1. NEOCÆNYRA YPTHIMOIDES.

Neocœnyra ypthimoides, Butler, P. Z. S. 1893, p. 646.

♂, Kondowi, Lower Nyika, W. of Lake Nyasa, 5th April, 1895.

♀, Lower Nyika, Feb. 2nd, 1895.

The male is noted as "Black Ringlet" and the female as "Black Ringlet with eyes," the ocelli being larger in this sex.

2. SAMANTA PERSPICUA.

Mycalesis perspicua, Trimen, Trans. Ent. Soc. London, 1873, p. 104, pl. i. fig. 3.

♀, Kambwiyi, Lower Nyika, Jan. 21st, 1895.

♀, Lower Nyika, Feb. 2nd.

"Dusky Ringlet" (*R. C.*).

3. MYCALESIS RHACOTIS.

Mycalesis rhacotis, Hewitson, Exot. Butt. iii. *Myc.* pl. viii. fig. 50 (1866).

♂ ♂, Henga, W. of Lake Nyika, Feb. 1st, 1895.

"Black Ringlet" (*R. C.*).

4. PHYSCÆNURA PIONE.

♀. *Physcœnura pione*, Godman, P. Z. S. 1880, p. 183, pl. xix. figs. 2, 3; ♂. Trimen, *l. c.* 1894, p. 20, pl. iv. fig. 1.

♂ ♀. *Periplysia johnstoni*, Butler, P. Z. S. 1893, p. 647, pl. lx. fig. 1, ♂.

♀ ♀, Mtambwi Hill, Deep Bay, west coast of Lake Nyasa, April 3rd, 1895.

"Black and white Heath" (*R. C.*).

5. YPTHIMA DOLETA, var.

Ypthima doleta, Kirby, Proc. Royal Dubl. Soc. 1879, separate copy p. 44.

♂, Henga, W. of Lake Nyika, Feb. 1st, 1895.

"Brindled Heath" (*R. C.*).

A single male, probably representing the dry-season form of this species; it differs chiefly from the typical form in its inferior size and the minute ocelli of the under surface.

6. APHYSONEURIA PIGMENTARIA.

Aphysoneuria pigmentaria, Karsch, Ent. Nachr. xx. p. 191 (June 1894).

Rhaphiceropsis pringlei, E. M. Sharpe, P. Z. S. (Aug. 1894), p. 336, pl. xix. figs. 1, 2.

Kondowi, Lower Nyika, April 6th and 11th, 1895.

This species is new to the Museum series; two examples were obtained, one in very good condition, the other somewhat worn. Mr. Crawshay calls it the "Black-and-white Glade Butterfly."

7. Charaxes druceanus.

Charaxes druceanus, Butler, Cist. Ent. i. p. 4 (Oct. 1869); Lep. Exot. p. 26, pl. x. fig. 4.

♂, Nyankowa Mt., 5575 feet alt., Nyika, April 10th, 1895.

The single specimen obtained is the most perfect I have ever seen, but its chief interest lies in the fact that the markings on the under surface of the wings are somewhat aberrant; the differences, if constant, would serve to distinguish it as a species, but the female received from Zomba shows transitional characters. Mr. Crawshay notes this as the "Burnt-umber and Silver Swallowtail," but it is one of the "Emperor" group.

8. Junonia sesamus.

Precis sesamus, Trimen, South Afr. Butt. i. p. 231, pl. iv. fig. 3 (1887).

Kondowi, 4110 feet alt., Lower Nyika, March 1895 (taken by M. Moffat, Esq., of the Livingstone Mission); Cheni-Cheni Mt., 6430 feet alt., Nyika, April 17th; Kambwiyi, 3800 feet alt., Lower Nyika, April 20th.

"Violet, scarlet, and black Tortoiseshell" (*R. C.*).

9. Junonia chapunga.

Junonia chapunga, Hewitson, Exot. Butt. iii. *Jun.* pl. i. figs. 2, 3 (1864).

♂, Nyankowa Mt., 5576 feet alt., Nyika, April 10th, 1895.

"Black scarlet-beaded Admiral" (*R. C.*).

10. Junonia trimenii.

Junonia trimenii, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 4.

♀, Mtambwi, foot of Nyika plateau, W. of Lake Nyasa, Feb. 4th, 1895.

"Salmon-coloured Tortoiseshell" (*R. C.*).

11. Junonia simia.

Precis simia, Wallengren, Kongl. Svenska Vetensk.-Akad. Handl. 1857, p. 26.

♂, Lumpi R., Lower Nyika, W. of Lake Nyasa, Feb. 2nd, 1895.

"Small Tortoiseshell" (*R. C.*).

12. Junonia calescens.

Junonia calescens, Butler, P. Z. S. 1893, p. 652.

♂, Watisi, Lower Nyika, Jan. 21st, 1895.

"Scarlet and black Tortoiseshell" (*R. C.*).

13. JUNONIA CERYNE.

Salamis ceryne, Boisduval, Faun. Madag. p. 46 (1833).

♂ ♂, Henga, west of Lake Nyasa, Feb. 1st, 1895.

"British (!) Tortoiseshell" (*R. C.*).

The trivial name is a curious one; there is certainly no British species of *Junonia*: memory is a treacherous reed to lean upon.

· 14. JUNONIA AURORINA.

Junonia aurorina, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 3.

♂, Kondowi, Lower Nyika, April 5th, 1895.

"Black and orange Tortoiseshell" (*R. C.*).

Prof. Aurivillius considers that *J. aurorina*, *J. milonia*=*kowara*, *J. sinuata*, and *J. tugela* may all be races or local forms of one species. This is one of the very few points in which I differ from this admirable Lepidopterist. I think it possible that *J. milonia* and *J. sinuata* may be seasonal forms of one species, and *J. tugela* and *J. aurorina* of another allied species; but I do not see my way at present to uniting the western and eastern species, which appear to be constant. Prof. Aurivillius proposes to regard *J. pyriformis* as a fifth development of the species, but as both the western and eastern forms are already provided with probable dry and wet-season races it would be puzzling to discover under what category to place this singularly formed type: that it is constant in its proper locality seems to be demonstrated conclusively by our seven examples; but it is not safe to dogmatize about the constancy of African Lepidoptera, and therefore I do not say that transitional links will not be discovered, which may eventually unite it to *J. aurorina*, though, at present, I do not believe that such links exist.

15. JUNONIA CLOANTHA.

Papilio cloantha, Cramer, Pap. Exot. iv. pl. cccxxxviii. A, B (1782).

♂ ♂, Henga, W. of Lake Nyasa, Feb. 1st, 1895.

"Hirsute underwinged Tortoiseshell" (*R. C.*).

16. JUNONIA ELGIVA.

Junonia elgiva, Hewitson, Exot. Butt. iii. *Jun.* pl. i. fig. 1 (1864).

♂, Ngerenge, W. coast of Lake Nyasa, Feb. 27th, 1895.

"Old-gold and black Admiral" (*R. C.*).

17. JUNONIA BOÖPIS.

Junonia boöpis, Trimen, Trans. Ent. Soc. London, 1879, p. 331.

♂, Henga, W. of Lake Nyasa, Feb. 1st, 1895.

"Blue underwinged Admiral" (*R. C.*).

18. JUNONIA CEBRENE.

Junonia cebrene, Trimen, Trans. Ent. Soc. London, 1870, p. 353.

♂ ♂, Henga, Jan. 25th, and Ngerenge, Feb. 24th.

"Light brown and black Admiral" (*R. C.*).

19. PYRAMEIS CARDUI.

Papilio cardui, Linnæus, Faun. Suec. p. 276 (1761).

♂, Chilindi (8 miles S. of Karonga), W. coast of Lake Nyasa, March 1st, 1895.

"Painted Lady" (*R. C.*).

20. HYPANARTIA SCHŒNEIA.

Eurema schœneia, Trimen, Trans. Ent. Soc. London, 1879, p. 329.

♂, Nyankowa Mt., 6500 ft. alt., April 9th, 1895.

"Scarlet Admiral" (*R. C.*).

The colouring of *Hypanartia* must be very fugitive; for specimens never come to hand with scarlet bands. As I have already suggested, this will probably prove to be a seasonal form of *H. hippomenes*.

21. PSEUDARGYNNIS HEGEMONE.

Argynnis hegemone, Godart. Enc. Méth. ix. p. 258 (1819).

Jaera duodecimpunctata, Snellen, Tijd. voor Ent. 2nd ser. part 7, pl. i. figs. 1, 2 (1872).

♂, Kondowi, Lower Nyika, W. of Lake Nyasa, April 5th; ♀, Kondowi, 4110 feet alt., April 11th, 1895.

"Silver-tipped Fritillary. ♀ full of bright green eggs" (*R. C.*).

Nyasa-land appears to be the headquarters of this rare butterfly, which for many years was unrepresented in the Museum collection; it never comes in numbers, but collections from Nyasa usually contain one or, rarely, two examples, and, as a rule, of the male sex.

22. HAMANUMIDA DÆDALUS.

Papilio dædalus, Fabricius, Syst. Ent. p. 482 (1775).

♂, Lower Nyika, W. of Lake Nyasa, Feb. 2nd, 1895.

"Dark grey and white Fritillary" (*R. C.*).

23. NEPTIS AGATHA.

Papilio agatha, Cramer, Pap. Exot. iv. pl. cccxxvii. A, B (1782).

♂, Henga, W. of Lake Nyasa, Jan. 30th; ♀, Cheni-Cheni Mt., 5700 feet alt., Nyika, April 17th, 1895.

"White Admiral. ♀ full of bright green ova" (*R. C.*).

24. NEPTIS INCONGRUA, sp. n. (Plate VI. fig. 2.)

♀. Upper surface dark olivaceous brown, the fringes black at the extremities of the veins, white between them: primaries with a minute subcostal white point near the end of the cell, two (elongated) immediately beyond the cell, and a fourth below the latter in the lower radial interspace; seven white spots in three groups crossing the disc much as in *N. marpessa*—three subapical (the first small), two on the median interspaces, and two, separated by the submedian vein, near external angle: secondaries crossed beyond the middle by a tolerably regular white belt, separated by the nervures into eight spots, the first of which is smallest: body black; head, collar, and front of pterygodes spotted with white. Under surface much paler than above, bronze-brown, with a paler triangular patch at centre of outer margin of all the wings, and with the costal area of secondaries paler to just beyond the white belt; primaries with three white spots forming an elongated triangle in the cell, four in a semicircle beyond the cell, and seven crossing the disc as above, but larger; belt of secondaries as above; pectus black, spotted with white and clothed with tawny hair; venter fuliginous, with sordid white central stripe; legs striped with white longitudinally. Expanse of wings 59 millim.

Kantorongondo Mt., 15,900 feet alt., Nyika, April 15th, 1895.

"Black and white Admiral. Grass-green ova" (*R. C.*).

This extraordinary species is represented by a single example, the wings of which on one side are badly shattered; it does not appear to be nearly related to any other species in the genus, but perhaps should form a distinct section next to *N. marpessa*, though in some respects it more nearly resembles the Australian *N. shepherdi*.

25. ATELLA COLUMBINA.

Papilio columbina, Cramer, Pap. Exot. iii. pl. ccxxxviii, A. B; iv. pl. cccxxxvii. D, E (1782).

♂, Henga, W. of Lake Nyasa, Jan. 28th, 1895.

"Common old-gold Fritillary" (*R. C.*).

26. BYBLIA VULGARIS.

Hypanis ilithyia, var. *vulgaris*, Staudinger, Exot. Schmett. p. 106.

♂, Mtambwi, foot of Nyika plateau, Feb. 4th, 1895.

"Reddish-brown Wall" (*R. C.*).

This is the form which I have hitherto regarded as *B. acheloia*; but Prof. Aurivillius has pointed out to me that *B. cora* is that race, a much rarer form, having the under surface of the secondaries belted with dull reddish argillaceous. *B. vulgaris* differs very little from *B. goetzius* of Herbst. The species of *Acræinæ* in the present collection are, as usual in African series, well represented, and in the present instance are of exceptional interest to us.

27. ACRÆA JOHNSTONI.

♂. *Acræa johnstoni*, Godman, P. Z. S. 1885, p. 537; ♀. Butler, P. Z. S. 1888, p. 91.

Var. *semialbescens*, Oberth.:

♂ ♂, Nyankowa Mt., Nyika, April 10th; Kondowi, 4110 feet alt., Lower Nyika, April 12th, 1895.

Var. *flavescens*=*kilimandjara*, Oberth.:

♂ ♂, Kondowi, April 6th and 12th, 1895.

"Black and white Fritillary. Flies high, generally far out of reach" (*R. C.*).

No two examples of this species are absolutely alike, and thus the unfortunate creature has received the following names since Mr. Godman first made it known:—M. Oberthür calls it *A. proteina*, *flavescens*, *semifulvescens*, *fulvescens*, and *semialbescens*; Herr Rogenhofer calls it *A. telekiana*, *confusa*, and *fallax*; and Herr Karsch denominates it *A. octobalia*: the species thus has ten names; it divides itself very vaguely into four varieties, as follows:—

1. *A. johnstoni*, in which the sexes differ greatly; the typical male is described by M. Oberthür as *A. semifulvescens*, and the typical female as *A. proteina*.
2. *A. fulvescens*, Oberth. = *A. telekiana*, Rghfr.
3. *A. semialbescens*, Oberth.
4. *A. flavescens* (if a male) = *A. kilimandjara*, Oberth. = *A. confusa* and *A. fallax*, Rghfr., and *A. octobalia*, Karsch.

In the last-mentioned form both sexes have adopted the female dress; but the male sometimes has the spots on the primaries yellowish.

Acræa is a very variable genus, and it has been the custom of lepidopterists to regard all the different phases of each species as distinct; the genus, when properly studied, reduces itself to about a third of its supposed magnitude. The triangular black apical patch, which has been made to serve as a specific character in several instances, is of no value whatever, being a purely individual characteristic dependent on presence or absence of moisture.

28. ACRÆA CABIRA.

Acræa cabira, Hopffer, Ber. Verh. Akad. Berlin, 1855, p. 640; Peters' Reise n. Mossamb. p. 378, pl. 23. figs. 14, 15 (1862).

♂ ♂, Chifumya, Lower Nyika, 20th April; ♀, Munchewi R., Lower Nyika, April 8th, 1895.

"Yellow and black Fritillary. ♀ full of orange-coloured ova" (*R. C.*).

29. ACRÆA VINIDIA.

Acræa vinidia, Hewitson, Ent. Month. Mag. xi. p. 130 (1874); Exot. Butt. v. *Acr.* pl. 7. figs. 45, 46 (1875).

Var. *Acræa acerata*, Hewitson, Ann. & Mag. Nat. Hist. ser. 4, vol. xiii. p. 381 (1874); Exot. Butt. v. *Acr.* pl. 7. fig. 44 (1875).

Albino: *Acræa tenella*, Rogenhofer, Ann. Hof. Mus. Wien (1891).

Acræa abbotii, Holland, Entomologist, Suppl. xxv. (1892).

♀, Ngerenge, W. coast of Lake Nyasa, Feb. 27th, 1895.

"Pale orange and black Fritillary" (*R. C.*).

This species, like most of the *Acrææ*, is very variable, and especially in the female sex; the present example is straw-yellow, with the normal black border, subapical bar, and basal marking; it may therefore stand as the female of the albino form *A. tenella*, a male example of which we have from Kilima-njaro.

As an example of the inconsistency of those lepidopterists who have been styled "Lumpers," Hewitson's separation of two palpable forms of the present species is noteworthy.

30. ACRÆA EXCELSIOR.

Acræa excelsior, E. M. Sharpe, P. Z. S. 1891, p. 192, pl. xvii. fig. 3.

♂ ♂, Kondowi, Lower Nyika, W. of Lake Nyasa, April 4th and 6th; ♀ ♀, Nyankowa Mt., 6500 feet alt., April 9th; ♂, Lumpi R. valley, Lower Nyika, April 21st, 1895.

"Deep-bordered orange and black Fritillary" (*R. C.*).

This rare species is one of the most beautiful in the genus.

31. ACRÆA VENTURA.

Acræa ventura, Hewitson, Ent. Month. Mag. xiv. p. 51 (1877).

♂, Lumpi R., Lower Nyika, W. of Lake Nyasa, Feb. 2nd; ♀, Nyankowa Mt., 5575 feet alt., Nyika, April 10th, 1895.

"Orange and black Fritillary."

32. ACRÆA SERENA, var. BUXTONI.

Acræa buxtoni, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xvi. p. 395 (1875).

♂ ♂, Deep Bay, W. coast of Lake Nyasa, Feb. 14th, and Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th, 1895.

"Small orange and black Fritillary" (*R. C.*).

Whether this is a race or a sectional form of *A. serena* can only be decided by breeding it; but with our present extensive series I find it impossible to regard the following as distinct species:—*A. serena = eponina = janisca = rougetii = manjaca = buxtoni = perrupta = balina*. Probably the Linnean name *terpsichore* should stand over *A. serena*, but there is so much doubt connected with the identification of that species that the better-known name seems preferable at present.

33. ACRÆA LYCIA, var. SGANZINI.

Acræa sganzini, Boisduval, Faune Madag. p. 34, pl. vi. figs. 6, 7 (1833).

♂, Mrali, W. coast of Lake Nyasa, March 2nd, 1895.

"Lesser speckled brown and white Fritillary" (*R. C.*).

A. lycia separates roughly into three forms, which are linked together by numerous intergrades; they are—

1. *Acræa sganzini*, vaguely resembling *Limnas chrysippus*.
2. *Acræa daira = usagaræ*, like 1, but wanting black at apex.
3. *Acræa lycia = braunei*, pattern of 1, ground-colour white.

Every link between these varieties is now represented in the Museum collection. *A. daira* appears to be an Eastern and Central-African sport of the species, occurring together with the two normal forms; it is completely linked to the *A. sganzini* type by intergrades, and therefore cannot be regarded as a race of the species. All that can be said is, that in Central and Eastern Africa a variety occurs which (in its extreme development) has been named *A. daira*.

34. ACRÆA ANACREON.

Acræa anacreon, Trimen, Trans. Ent. Soc. London, 1868, p. 77, pl. vi. figs. 3-5.

♂. Var. *Acræa bomba*, H. G. Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 128 (1880); Rhop. Exot. i. *Acr.* pl. iii. figs. 5, 6 (1892).

Acræa induna, Trimen, Trans. Ent. Soc. 1895, p. 184, pl. 5. figs. 3, 3 *a*.

♂, Nyankowa Mt., 5575 feet alt., Nyika, April 10th; Kantorongondo Mt., 7305 feet alt., Nyika, April 16th; ♀, Cheni-Cheni Mt., 7225 feet alt., Nyika, April 17th, 1895.

Intermediate grades to *A. bomba*:

♂ ♂, Nyankowa Mt., 5575 ft. alt., Nyika, April 9th and 10th; Kantorongondo Mt., 7305 feet alt., Nyika, April 16th.

We received a typical female of *A. bomba* (but somewhat melanistic) from Zomba; it is the species referred to P. Z. S. 1895, p. 262, n. 45. The black apical area and the width of the band on under surface of secondaries are both variable characters of no specific importance.

35. ACRÆA GUILLEMEI.

♂. *Acræa guillemei*, Oberthür, Études, livr. xvii. p. 19, pl. 1. fig. 1 (1893); ♀. Butler, P. Z. S. 1893, p. 658.

Var. ♂. *Acræa periphanes*, Oberthür, *l. c.* p. 20, pl. 2. fig. 23 (1893).

Var. *periphanes*.

♂, Henga, W. of Lake Nyasa, Jan. 22nd, 1895.

"Scarlet black-spotted and black-tipped Fritillary" (*R. C.*).

This is a rare variety of *A. guillemei*, differing in nothing excepting the broad black apical patch of the primaries—a variation which crops up in a great number of species and is, doubtless, seasonal.

36. ACRÆA DOUBLEDAYI.

Acræa doubledayi, Guérin, Lefebvre's Voy. en Abyss. vi. p. 378 (1847).

Acræa oncæa, Hopffer, Peters' Reise n. Mossamb. v. pl. 24. figs. 5-8 (1862).

Acræa axina, Westwood in Oates's Matabele-Land, p. 344, pl. F. figs. 5, 6 (1881).

Var. *Acræa dircæa*, Westwood, l. c. p. 348.

♀. *Telchinia nero*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 102 (1883).

♂, Lumpi R., Lower Nyika, W. of Lake Nyasa, Feb. 2nd, 1895.

"Small speckled Fritillary" (*R. C.*).

Var. *dircæa*:

Henga, W. of Lake Nyasa, Feb. 1st, 1895.

"Rose and black white-tailed Fritillary" (*R. C.*).

This form varies, not only in the width of the black apical patch of primaries, the position of the second spot of the central transverse series, the width of the black border of the secondaries with its more or less defined submarginal spots, but, curiously enough, the terminal two-fifths of the abdomen may be either ochreous or snow-white. As in the variety *axina* (♀, *nero*) the submarginal spots of the primaries are wanting. The specimen now received bears a strong general resemblance to *A. natalica.*

In his paper, published in the 'Proceedings' for 1891, Mr. Trimen lays stress upon the absence of the submarginal spots as a good character for the discrimination of *A. axina* from *A. doubledayi*: I am sure that his earlier decision was the correct one, and that this character cannot be relied upon; in *A. cæcilia*, var. *stenobæa* (♀ =*ligus*=*albomaculata*) the submarginal spots are sometimes present, sometimes absent[1].

37. Acræa natalica.

Acræa natalica, Boisduval, Voy. de Deleg. p. 590 (1847).

♂ ♀, Foot of Jakwa Mt., Henga-Nkamanga, W. of Lake Nyasa, Jan. 28th and 29th; ♂, Mtambwi, foot of Nyika plateau, Feb. 4th, 1895.

♂, "Rose and black Fritillary"; ♀, "Dusky Fritillary" (*R. C.*).

With our present extensive series it is impossible to keep *A. pseudegina* distinct from *A. natalica*, of which it is only the Western phase, the two extremes are completely linked by intergrades.

38. Acræa caldarena.

Acræa caldarena, Hewitson, Ent. Month. Mag. xiv. p. 52 (1877).

♂ ♀, taken *in coitu*, Kondowi, Lower Nyika, April 6th, 1895.

I gave the correct synonymy of this species (if species it be) in the 'Proceedings' for 1893, p. 657. I, however, strongly suspect it to be merely a seasonal development of *A. cæcilia*, var. *stenobæa*, from which it chiefly differs in the broad black apical patch on the primaries.

39. Acræa asema.

Acræa asema, Hewitson, Ent. Month. Mag. xiv. p. 52 (1877); Trimen, P. Z. S. 1894, p. 24, pl. iv. figs. 3, 3 *a*.

Acræa empusa, Butler, P. Z. S. 1893, p. 656.

Acræa omrora, Trimen, P. Z. S. 1894, p. 24, footnote.

♀, Lumpi R., Lower Nyika, Feb. 2nd, 1895.

"Small speckled Fritillary" (*R. C.*).

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[1] My identification of *A. stenobæa* with a S.-African male of *A. ligus* was confirmed by Prof. Aurivillius during his recent visit (Aug. 1895).

This species varies in tint, from semitransparent greyish bone-colour to almost opaque orange tawny; the spots vary in number and size, and the apical border of primaries in width: it is this inconstancy in the present species which convinces me that *A. stenobœa=ligus* is only a bright-coloured and more opaque phase of *A. cæcilia*.

40. ACRÆA ANEMOSA.

Acræa anemosa, Hewitson, Exot. Butt. iii. pl. 8. figs. 14, 15 (1865).

Acræa arcticincta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 103 (1883).

♂. Ndara, W. coast of Lake Nyasa, March 2nd, 1895.

"Orange and black, crimson and pink underwinged Fritillary. Have only seen this one specimen" (*R. C.*).

This is a very variable species; not only does it differ greatly in the width of the black border of secondaries (on which character I based my *A. arcticincta*), but in the size and number of the black spots on the primaries. One of our 31 examples, in addition to the basal black patch, the bar beyond the end of cell, and the apical patch, exhibits five well-defined discal black spots, all of which are absent in some specimens, it also shows a conspicuous black spot on the lower discocellular veinlet.

The Lycænidæ of the collection contain a nice series of the new genus *Uranothauma* and several other forms of interest.

41. ALÆNA NYASSÆ.

Alæna nyassæ, Hewitson, Ent. Month. Mag. xiv. p. 6 (1877).

Lumpi R., Lower Nyika, Feb. 2nd; Mtambwe Hill, Deep Bay, April 3rd; Manchewi Falls, Lower Nyika, April 6th; Lumpi Valley, April 13th, 1895.

"Marbled white Skipper" (*R. C.*).

These specimens are interesting, three of them being white-banded as in typical *A. nyassæ*, but with the subapical white spot of var. *ochracea*; the fourth example has a white band across the primaries, but a buff band across the secondaries, thus proving that I was correct in not regarding *A. ochracea* as a distinct species.

42. POLYOMMATUS BÆTICUS.

Papilio bœticus, Linnæus, Syst. Nat. i. 2, p. 789 (1767).

♀, Kapoio, Songwi R. plain, W. coast of Lake Nyasa, Feb. 26th; ♀, Nyankowi Mt., Nyika, 5575 feet alt., April 9th; ♂ ♀ *in coitu*, April 10th; ♂, Kwereru Hill, Deep Bay, April 22nd, 1895.

♂, "Alexis-like Blue"; ♀, "Dull azure Blue" (*R. C.*).

43. CATOCHRYSOPS OSIRIS.

Lycæna osiris, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters' Reise n. Mossamb. v. p. 409, pl. 26. figs. 11, 12 (1862).

♂, Lumpi R. valley, Lower Nyika, April 21st, 1895.

44. CATOCHRYSOPS HIPPOCRATES.

Hesperia hippocrates, Fabricius, Ent. Syst. iii. p. 288 (1793); Donovan, Ins. Ind. pl. 45. fig. 3 (1800).

♂, Lower Nyika, W. of Lake Nyasa, Feb. 2nd, 1895.

A rare western form, which I have not previously seen from Central Africa.

45. CATOCHRYSOPS GLAUCA.

Lycæna glauca, Trimen, South Afr. Butt. vol. ii. p. 21 (1887).

♂ ♂, Kwereru Hill, Deep Bay, April 22nd, 1895.

"Chalk-hill Blue. A frequenter of open forest, very active and restless and difficult to capture" (*R. C.*).

This very beautiful species is quite new to us: in its pale glittering yellow-greenish tint it stands out distinct from all the other species of the *C. parsimon* group.

46. EVERES JOBATES.

Lycæna jobates, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters' Reise n. Mossamb. v. p. 408, pl. 26. figs. 9, 10 (1862).

♀, Upper Leya, six miles N.W. of Deep Bay, March 3rd, 1895.

"Orange-lower-wing Blue. Very restless" (*R. C.*).

The finest example I have seen of this somewhat rare species.

47. AZANUS SIGILLATUS.

Lampides sigillata, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 483 (1876).

♂ ♂, Mrali, W. coast of Lake Nyasa, March 2nd, 1895.

"Lesser Alexis-like Blue" (*R. C.*).

A rare form of the *A. gamra* group, originally described from a pair received from Abyssinia; one of the examples obtained by Mr. Crawshay agrees in all respects with *A. natalensis*, Trimen, which will therefore have to sink as a synonym of my species.

48. TARUCUS PLINIUS.

Hesperia plinius, Fabricius, Ent. Syst. iii. 1, p. 284 (1793).

Lycæna pulchra, Murray, Trans. Ent. Soc. London, 1874, p. 524, pl. 10. figs. 7, 8.

♀, Foot of Jakwa Mt., Henga-Nkamanga, W. of Lake Nyasa, Jan. 28th; ♂, Mrali, W. coast of Lake Nyasa, March 2nd; ♂, Nyankowa Mt., Nyika, April 10th; ♀, Cheni-Cheni Mt., 4500 feet alt., Nyika, April 18th; ♂ ♀, Lumpi R. valley, Lower Nyika, April 21st, 1895.

Mr. Crawshay calls the male "Double peacock-spotted hair-tailed Blue," and the female "Peacock-eyed double-tailed Blue" and "Chequered double peacock-eye Blue."

The species is very common and varies a good deal.

49. Castalius hintza.

Lycæna hintza, Trimen, Trans. Ent. Soc. London, ser. 3, vol. ii. p. 177 (1864); Rhop. Afr. Austr. ii. p. 243 (1866).

♀, Chikunguru, Lower Nyika, April 20th, 1895.

"Black and white chequered violet-tinged Blue" (*R. C.*).

This species differs from my female *C. resplendens* on both surfaces, the secondaries of the Abyssinian form being crossed from apex to inner margin by a continuous band above, the markings on the under surface being also more regular, those crossing the disc forming a regular zigzag: the female before me corresponds with a male from Balapye, Kama's Country, and is doubtless the true *C. hintza*; but *C. resplendens* appears to be a distinct though allied form.

50. Castalius calice.

Lycæna calice, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 642; Peters' Reise n. Mossamb. v. p. 405, pl. 26. figs. 4, 5 (1862).

♀, Henga, W. of Lake Nyasa, Jan. 30th, 1895; Cheni-Cheni Mt., 4500 feet alt., Nyika, April 18th; ♂ ♀, Chikunguru, Lower Nyika, April 20th, 1895.

"Black-bordered tiny white Blue" (*R. C.*).

A rare species in collections.

51. Lycænesthes adherbal.

♀. *Lycæna adherbal*, Mabille, Bull. Soc. Zool. France, 1877, p. 217.

♂. *Lycænesthes lunulata*, Trimen, P. Z. S. 1894, p. 51, pl. vi. fig. 12.

♀, Kambwiyi, 3800 feet alt., Lower Nyika, April 20th, 1895.

"Three-tailed Blue" (*R. C.*).

The finest example which has hitherto come to hand of this beautiful species.

52. Zizera gaika.

Lycæna gaika, Trimen, Trans. Ent. Soc. London, 3rd ser. vol. i. p. 403 (1862).

♀, Mrali, W. coast of Lake Nyasa, March 2nd, 1895.

53. Plebeius trochilus.

Lycæna trochilus, Freyer, Neuere Beitr. v. pl. 440. fig. 1 (1844).

Lumpi R., Lower Nyika, Feb. 2nd; Kondowi, April 4th; Chiwayi, 3700 feet alt., April 20th, 1895.

"Tiny dark-coloured orange-spotted Blue" (*R. C.*).

54. Durbania hildegarda.

♀? *Teriomima*? *hildegarda*, Kirby, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 367 (1887); Rhop. Exot. i. *Afr. Lyc.* pl. iv. figs. 7, 8 (1888).

Kondowi, Lower Nyika, 4110 feet alt., April 5th, 6th, and 11th, 1895.

Quite a new species to us; Mr. Crawshay calls it "Orange, black-barred Heath."

55. TINGRA AMENAIDA.

Pentila amenaida, Hewitson, Exot. Butt. v. *Pent.* & *Lipt.* pl. 2. figs. 4–7 (1873).

Kambwiyi, Lower Nyika, W. of Lake Nyasa, Jan. 21st; Mtambwi Hill, Deep Bay, W. coast of Lake Nyasa, April 3rd; Kondowi, April 5th, 1895.

"Orange and black-speckled" (*R. C.*).

56. LARINOPODA PEUCETIA.

Pentila peucetia, Hewitson, Exot. Butt. iii. *Pent.* & *Lipt.* pl. 1. fig. 3.

Lumpi Valley, Lower Nyika, April 13th, 1895.

"Black and white Wood-White with orange legs" (*R. C.*).

Previously unrepresented in the general Museum series, and in the Hewitson collection by the type specimen only.

57. LACHNOCNEMA BIBULUS.

Hesperia bibulus, Fabricius, Ent. Syst. iii. 1, p. 307. n. 163 (1793).

♂ ♀, Chilindi (8 miles S. of Karónga), W. coast of Lake Nyasa, Feb. 23rd; ♀, *var.*, Lumpi R. valley, 4000 feet alt., Lower Nyika, April 21st, 1895.

"Black and white silver-speckled underwing Blue" (*R. C.*)[1]. Var. *durbani*: "Fluffy Blue. ♀, orange ova" (*R. C.*).

Formerly it was supposed that the two types of female indicated distinct species, but they are probably temperature forms. Wherever the species occurs, both types are to be found; the present series contains typical females of *L. bibulus* and *L. durbani*.

58. HYREUS PALEMON.

Papilio palemon, Cramer, Pap. Exot. iv. pl. cccxc. E, F (1782).

Manchewi Falls, Lower Nyika, April 6th; Nyankowa Mt., 5425 feet alt., Nyika, April 8th; Kantorongondo Mt., 5900 feet alt., April 14th and 15th; Cheni-Cheni Mt., 4500 feet alt., April 18th, 1895.

"Silvery underwinged" and "Bronze-winged Blue. ♀, ova emerald-green" (*R. C.*).

59. HYREUS VIRGO, sp. n. (Plate VI. fig. 1.)

♀. Snow-white: primaries with the base, costal and external borders, a transverse patch over the discocellulars, and a macular subapical bar, sometimes confluent with the external border, black: secondaries with a black external border, its inner edge slightly irregular, two metallic-blue submarginal spots, between which at extremity of first median branch the usual tail, black tipped with white, is emitted; fringes spotted with white: body black, margins of eyes and a transverse line on the vertex white; antennæ ringed with white. Under surface pure white, with black markings nearly as in *H. juba*, but more sharply defined, the central irregular band across the secondaries only represented by a black Y-shaped costal patch, with the V portion filled in; the marginal border barely indicated, excepting towards anal angle, where the black spots touched with blue and green metallic scales are well-defined, as well as an irregular zigzag line at the back of them. Expanse of wings 33 millim.

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[1] By some oversight the sexual marks are reversed on the label, the white-banded females being labelled as males, and the uniform male as female.

♀ ♀, Cheni-Cheni Mt., 4500 feet alt., Nyika, April 18th, 1895.

"Black-bordered white Blue" (*R. C.*).

Two examples of this very fine species were obtained; one of which, however, was much shattered.

60. URANOTHAUMA CRAWSHAYI.

Uranothauma crawshayi, Butler, P. Z. S. 1895, p. 631, pl. xxxv. figs. 6, 7.

♂ ♂, Nyankowa Mt., 6500 feet alt., Nyika, April 9th, 1895; ♀, Kantorongondo Mt., 5900 feet alt., Nyika, April 15th; ♂, ♀ ♀, 6975 feet alt., April 16th, 1895.

"Giant Blue" (*R. C.*).

61. SPINDASIS CAFFER.

Aphnæus caffer, Trimen, Trans. Ent. Soc. London, 1868, p. 88, and 1870, p. 368.

Aphnæus natalensis, Hewitson (not Westwood), Ill. Diurn. Lep. p. 62, pl. xxv. figs. 1, 2 (1865).

♂, Henga, west of Lake Nyasa, Jan. 22nd, 1895.

"Orange and black-barred Blue" (*R. C.*).

In his 'South African Butterflies,' vol. ii. p. 150, Mr. Trimen follows Hewitson in regarding this as *S. natalensis* of Westwood—on the ground, principally, "of the large size of the orange anal-angular marking in the hind wing." We, however, possess what is clearly the original of the figure in the 'Genera,' a worn female with unusually large anal patch; it was obtained in 1846, labelled "*Thecla natalii*, Pt. Nat.," and agrees in all details of marking with the original figure. With regard to "the small development of the hind marginal lunulate whitish streak," also referred to by Trimen, the figure and specimen are both faulty, the latter being badly rubbed on one hind wing, and the same part broken away on the other; the imagination of Hewitson was not lively enough to enable him to supply this deficiency in the whitish streak.

62. SPINDASIS NYASSÆ.

Aphnœus nyassœ, Butler, Ent. Month. Mag. xx. p. 250 (1884); P. Z. S. 1894, p. 569, pl. xxxvi. fig. 4.

♂. Mrali, W. coast of Lake Nyasa, March 2nd; ♀, Henga, W. of Lake Nyasa, Feb. 1st, 1895.

"Orange and black-barred long-tailed Blue" (*R. C.*).

63. AXIOCERSES AMANGA.

Zeritis amanga, Westwood, in Oates's Matabele-Land, p. 351 (1881).

♂, Mtambwi, foot of Nyika plateau, Feb. 4th; Kwereru Hill, Deep Bay, April 22nd, 1895.

"Crimson-plush underwing Copper" and "Spike-winged Copper" (*R. C.*).

64. AXIOCERSES PERION.

Papilio perion, Cramer, Pap. Exot. iv. pl. ccclxxix. B, C (1782).

♀, Henga, Jan. 30th; ♂, Lumpi R., Feb. 2nd; ♂, Mrali, coast of Lake Nyasa, March 2nd, 1895.

♂, "Scarlet and black Copper"; ♀, "Dull red Copper" (*R. C.*).

65. VIRACHOLA ANTA.

Lycæna anta, Trimen, Trans. Ent. Soc. ser. 3, vol. i. p. 402 (1862).

♀, Ngerenge Plains, Feb. 24th; Chilindi (8 miles S. of Karonga), March 1st, 1895.

"Long-tailed curly-tufted Blue, black and orange spots" (*R. C.*).

66. TATURA BUXTONI.

♀. *Hypolycæna buxtoni*, Hewitson, Ent. Month. Mag. x. p. 206 (1874).

♂ ♀. *Hypolycæna seamani*, Trimen, Trans. Ent. Soc. London, 1874, p. 332, pl. ii. figs. 3, 4.

♂ ♂, Lower Nyika, W. of Lake Nyasa, Feb. 2nd, 1895.

"Striped Blue with four tails" (*R. C.*).

A little larger than our solitary male from D'Urban.

67. TATURA CÆCULUS.

Iolaus cæculus, Hopffer, in Peters' Reise n. Mossamb. p. 402, pl. xxv. figs. 12–14 (1862).

♀, Mtambwi, foot of Nyika plateau, Feb. 4th, 1895.

"Grey underwing striped Blue" (*R. C.*).

The largest example of the female that I have seen, and almost as bright in colouring as the male.

68. EPAMERA SIDUS.

Iolaus sidus, Trimen, Trans. Ent. Soc. London, 3rd ser. ii. p. 176 (1864); Rhop. Afr. Austr. ii. p. 224, pl. iv. figs. 5, 6 (1866).

♀, Kondowi, 4110 feet alt., Lower Nyika, Jan. 1895.

"Taken by M. Moffat, Esq., Livingstone's Mission, and given to me" (*R. C.*).

New to the general Museum series; unfortunately it has lost its abdomen.

Among the *Pierinæ*, Mr. Crawshay's collection contains several rare and interesting species.

69. MYLOTHRIS AGATHINA.

Papilio agathina, Cramer, Pap. Exot. iii. pl. ccxxxvii. D, E (1782).

♂, Henga, Feb. 1st; Mtambwi, Feb. 4th; Mrali, March 2nd; ♀, Vuwa sand-flats, W. coast of Lake Nyasa, March 3rd, 1895.

"Scallop-shell White" (*R. C.*).

70. MYLOTHRIS NARCISSUS, var. DENTATUS. (Plate VI. fig. 3.)

♂ ♀. *Mylothris narcissus*, Butler, P. Z. S. 1888, p. 95.

♂, Kantorongondo Mt., Nyika, 5900 feet alt., April 15th, 1895.

"Chrome-yellow underwing White" (*R. C.*).

The form now received differs from the typical male from Kilima-njaro in having the costal black border continuous, only interrupted by the upper discocellular veinlet; a diffused black streak in the cell above the median vein, the outer border acutely quinque-dentate; and sometimes a little oblique black streak below the submedian nervure and a broad apical black bar uniting the first two marginal spots of the secondaries: in some respects it more nearly resembles the typical female than the typical male does, while Miss Sharpe's *M. jacksoni* more nearly corresponds with typical male *M. narcissus*. Unless we have here three very closely allied species, it must be assumed that *M. narcissus* is dimorphic; a better series will doubtless solve the problem.

71. MYLOTHRIS CRAWSHAYI, sp. n. (Plate VI. fig. 4.)

A very perfect copy, in both sexes, of *Phrissura lasti*, and therefore intermediate in character between *M. narcissus* and *M. trimeni*: in size, form, and colouring the male resembles the latter, but the apical patch extends in an oblique curve from just beyond the cell to the third median branch, its inner edge being zigzag, the remaining marginal spots not included in this patch are hastate; the base of the wings is slightly more heavily blackened than in *M. trimeni* and the marginal spots of the secondaries reduced to mere points; on the under surface the apex of primaries and entire surface of secondaries are bright lemon-yellow instead of saffron-yellow. Expanse of wings 57–64 millim.

The female has pearl-white primaries, the cell, costal border, and base of internal border densely dusted with smoky grey; an oblong patch of the same colour at external angle; the apical area and outer border to below the first median branch smoky grey, with sulphur-yellow internervular longitudinal lines; inner edge of border acutely zigzag: secondaries sulphur-yellow, with marginal rounded black spots: body normal, blue-blackish with yellow venter. Primaries below pearl-white, showing the upper surface pattern through the wing, apical border slightly washed with sulphur-yellow; a marginal series of black points: secondaries as above, excepting that the base of the costa is chrome-yellow: pectus whitish, with yellowish hairs. Expanse of wings 59 millim.

♂♂, ♀, Nyankowa Mt., 6500 feet alt., April 9th; ♂♂, Kantorongondo Mt., 5000 feet alt., Nyika, April 14th and 15th, 1895.

"Chrome-yellow underwing White. A high flier, perching on trees high up, but of weak flight" (*R. C.*).

72. COLIAS EDUSA, var. ELECTRA.

Papilio electra, Linnæus, Syst. Nat. i. 2, p. 764 (1767).

♂, Nyankowa Mt., 5425 feet alt., April 8th; ♂ ♀, 5575 feet, April 10th; ♂, Kantorongondo Mt., 5900 feet, April 15th; ♂ ♀, Cheni-Cheni Mt., 4500 feet alt., April 18th, 1895.

"Ova oblong and yellow" (*R. C.*).

The white female is only the ordinary *C. helice* form.

73. TERIAS CHALCOMIÆTA.

Terias chalcomiæta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. iii. p. 190 (1879).

♀, Foot of Jakwa Mt., Henga-Nkamanga, Jan. 29th, 1895.

"Black-tipped light-chrome Yellow; ova oblong and sharp-pointed, not spherical" (*R. C.*).

This is probably a seasonal form of *T. senegalensis*.

74. TERIAS DESJARDINSII (seasonal form *T. regularis*).

Terias regularis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).

♀, Henga, W. of Lake Nyasa, Jan. 24th, 1895.

"Black-bordered Yellow" (*R. C.*).

An interesting example of the female, showing the dotted margin to the secondaries characteristic of typical *T. desjardinsii*.

75. TERACOLUS OPALESCENS.

♀. *Teracolus opalescens*, Butler, Ent. Month. Mag. xxiii. p. 30 (1886).

The male of this form has the black more largely developed than in any of the other members of the *T. eris* group, excepting perhaps *T. abyssinicus* (the male of which is unknown to me): the pattern of the primaries is almost the same as in *T. eris*, but the apex is more purple in tint with the spots upon it golden ochreous, the wings are moreover decidedly broader; the secondaries show a marginal series of well-defined black spots; the colouring below is milky white; the veins of the primaries tipped with black, the first and second median branches terminating in black spots and the spots on the disc much larger; the secondaries show a broad bright saffron-yellow costal streak and a paler longitudinal submedian streak. and the nervures are tipped with black.

♂, Foot of Jakwa Mt., 3210 feet, Henga-Nkamanga, Jan. 29th; ♂ ♀, Henga, Jan. 30th and 31st, 1895.

♂, "Black and gold-tipped White"; ♀, "Black-tipped mother-of-pearl underwing White" (*R. C.*).

The female now received is smaller than the type from Delagoa Bay, and has a broader black internal border to the primaries (in which respect it more nearly corresponds with the male); but of a pair received from the Victoria Nyanza, this border in the female corresponds with that of the type. As more examples of these representatives of *T. eris* come to hand, the fact that they are true to locality seems to be gradually established on a firmer basis.

76. TERACOLUS MUTANS.

♀. *Teracolus mutans*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xix. p. 459 (1877).

♂. Nearly resembles *T. vesta* on the upper surface, but the base of the wings is dusted with bluish grey instead of black, the outer area creamy ochreous (less salmon-tinted than in *T. vesta*), pattern exactly as in the female, therefore much more yellow throughout than in *T. vesta*.

♂, Henga, west of Lake Nyasa, Feb. 1st, 1895.

"White-centred, yellow and black-mottled White. Difficult to take and not common" (*R. C.*).

The arrival of this male is especially interesting to me, as Prof. Aurivillius was inclined to believe my *T. rhodesina* to be the male of *T. mutans*, considering that the differences of pattern might be sexual: it is now satisfactorily proved that there is no difference of pattern between the sexes, but only in the colouring of the outer half of the upper surface[1]; precisely what might have been expected, from what we know of the sexes of *T. hanningtonii* and *T. amelia*.

77. TERACOLUS ANAX.

Callosune anax, H. G. Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 125 (1889); Rhop. Exot. i. *Call.* pl. i. figs. 5–8 (1889).

Teracolus eliza, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 441 (1890); Waterhouse, Aid, vol. ii. pl. 189. figs. 5, 6 (1890).

♂, Deep Bay, W. coast of Lake Nyasa, Feb. 7th, 1895.

"Violet-tipped White" (*R. C.*).

An especially well-marked specimen, with bold black spots on the under surface. It has recently been suggested that this may be a seasonal form of *T. regina*, of which Mr. Trimen formerly regarded it as a variety; the only odd thing is that typical

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[1] This buff colouring is limited by the black band as in *T. vesta*.

T. regina does not come to hand from Central Africa. The collection made by Emin Pasha contained half a dozen examples of *T. anax*, but not one of *T. regina*; Mr. Crawshay's first collection, from Lake Mweru, contained one female *T. anax* and his present collection contains one male, again *T. anax*; but perhaps this form is the only one in Central Africa, and typical *T. regina* is only produced, as a second form, as the species ranges southwards.

78. TERACOLUS JALONE.

Euchloe jalone, Butler, Cist. Ent. i. p. 14 (1869).

Teracolus phegyas (part.), Butler, P. Z. S. 1893, p. 664.

♂, Henga, W. of Lake Nyasa, Jan. 25th, 1895.

"Purple-tipped black-veined White" (*R. C.*).

This form seems so rare that it may well be mistaken for *T. phlegyas*; in all probability it is the Nyasa form of that species.

79. TERACOLUS GAVISA.

♂. *Anthopsyche gavisa*, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857; Lep. Rhop. Caffr. p. 13. n. 6.

♀. *Anthopsyche omphale*, Wallengren, loc. cit. p. 11.

♂ ♀. *Teracolus subvenosus*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1885).

♂, Henga, Jan. 24th; ♀, Jan. 25th; ♀, foot of Jakwa Mt., Henga-Nkamanga, Jan. 29th; ♂ ♀ *in coitu*, Henga, Jan. 30th, 1895.

Mr. Trimen (South African Butterflies, iii. p. 135) says:—"Having examined the types of *subvenosus*, Butl., from Victoria Nyanza, I find the female inseparable from that of *T. gavisa*, while the male, though very near the corresponding sex of the species named, differs in wanting the inner black edging of the apical patch, and in the feeble development of the inner marginal blackish bar of the fore wings and the costal one of the hind wings." Although I do not admit that the type of *T. subvenosus* agrees absolutely with the typical female of *T. gavisa*, inasmuch as the oblique subapical bar on the front wings is much narrower in the latter, I am compelled by the receipt of many transitional specimens to agree with Mr. Trimen that my female is only a slight variety of Wallengren's, and, moreover, that my male is only a better-marked variety, though absolutely inseparable as a species. The series received from Dr. Gregory, taken in conjunction with the five examples in the present collection, renders the discrimination of the two forms *T. gavisa* and *T. subvenosus* simply hopeless.

Unless *T. hero* is another variety of *T. gavisa* (which I think possible), I am of opinion that the female of *T. sipylus* would be better placed under *T. hero* than under *T. gavisa*, the black veining of the under surface being barely noticeable; the whole of these forms might then sink under *T. achine*, *T. hyperides* being included as a starved form, though in some respects it more nearly resembles *T. helle*=a race of *T. antevippe*.

80. TERACOLUS INFUMATUS, sp. n. (Plate VI. figs. 5, 6.)

Nearest to *T. arethusa*, the male with a similar but less angular orange or vermilion patch on the black apical area; the costa blackened almost to the base; the spot at the end of the cell larger, and a broad blackish streak along the inner margin as in some females of *T. arethusa*; the secondaries with a broad diffused blackish border, running inward along the nervures; base and costa almost to apex broadly blackish; body normal. Primaries below not yellow at base, but more so at apex; black discocellular spot larger, a broad internal grey streak ending in a blackish diffused spot: secondaries somewhat greyish at base, costal orange streak defined, black-dotted orange spot at end of cell larger; female with better-defined, though small, orange dashes on the apical area than in most females of *T. arethusa*; other black areas extended, so as more nearly to repeat the pattern of *T. gavisa* ♀, but only the two apical white spots on the border of secondaries large and well defined, the others small and greyish: below the colouring throughout is clearer and brighter than in *T. arethusa* and the primaries show a broad internal grey streak terminating in a blackish spot; the costal orange edging of the secondaries, as in the male, is bright and sharply defined. Expanse of wings, ♂ 44 millim., ♀ 42 millim.

♂ ♀, Henga, 24th, 26th, and 30th January, 1895.

"Dusky Orange-tip" (*R. C.*).

We have long had a single female of this very distinct species in the Museum collection, from Niomkolo, Lake Tanganyika, obtained in January 1890, and presented to the Museum by Alexander Carson, Esq.

81. CATOPSILIA FLORELLA.

Papilio florella, Fabricius, Syst. Ent. p. 479 (1775).

♀, Nyankowa Mt., Nyika, April 10th, 1895.

"Brimstone" (*R. C.*).

82. BELENOIS SEVERINA.

Papilio severina, Cramer, Pap. Exot. iv. pl. cccxxxviii. G, H (1782).

♂ ♀ *in coitu*, Henga, W. of Lake Nyasa, Jan. 22nd, 1895.

"Common black-bordered White" (*R. C.*).

83. BELENOIS MESENTINA, var. AGRIPPINA.

Pieris agrippina, Felder, Reise der Nov., Lep. ii. p. 173 (1865).

♀, Henga, Jan. 22nd; Ngerenge, W. coast of Lake Nyasa, Feb. 27th; ♂, Nyankowa Mt., 6500 feet alt., April 9th, 1895.

♂, "Common White"; ♀, "Deep black-bordered White" (*R. C.*).

The females show almost the deep yellow under-surface coloration of the form to which I gave the name of *B. auriginea*, but the upper surface and both surfaces of the male are quite like typical *B. agrippina*: possibly the yellow on the under surface of the females may be seasonal; but if so it is characteristic of our winter months, the only awkward fact being that it reappears in July at Zomba; then, again, many specimens of the pale type were collected by the late Emin Pasha at Wadelai from January to March. Altogether the question of seasonal dimorphism in this species becomes very complicated.

84. HERPÆNIA ERIPHIA.

Pieris eriphia, Godart, Enc. Méth. ix. p. 157 (1819).

♂, Foot of Jakwa Mt., 3210 feet, Henga, Jan. 29th, 1895.

"Marbled White" (*R. C.*).

85. PAPILIO CORINNEUS.

Papilio corinneus, Bertoloni, Mem. Acc. Bologna, 1849, p. 9, pl. 1. figs. 1–4.

Henga, W. of Lake Nyasa, Jan. 28th, 1895.

"Mother-of-Pearl and Black" (*R. C.*).

86. TAGIADES FLESUS.

Hesperia flesus, Fabricius, Sp. Ins. ii. p. 135 (1781).

Manchewi Falls, Lower Nyika, April 6th; Lumpi R. valley, April 21st, 1895.

"Large grey-patched Skipper" (*R. C.*).

87. SAPÆA TRIMENII.

Sapæa trimenii, Butler, P. Z. S. 1895, p. 264, pl. xv. fig. 5.

♂ ♀. No label with specimens.

88. HESPERIA DROMUS.

Pyrgus dromus, Plötz, Mitth. naturw. Vereins, 1884, p. 6.

Mrali (25 miles N. of Deep Bay), W. coast of Lake Nyasa, Feb. 22nd; Kaporo, Songwe R. plains, Feb. 26; Deep Bay, March 16th, 1895.

"Black and white Skipper" (*R. C.*).

89. OXYPALPUS RUSO.

Pamphila ruso, Mabille, Comptes Rendus Soc. Ent. Belge, 1891, p. clxxxiii.

♂, Lumpi R. valley, Lower Nyika, April 21st, 1895.

"Orange and black barred Skipper" (*R. C.*).

90. OSMODES RANOHA.

Pamphila ranoha, Westwood, in Oates's Matabele-Land, p. 353 (1881).

♂, Lumpi R., Lower Nyika, Feb. 2nd, 1895.

91. HETEROPTERUS FORMOSUS.

Heteropterus formosus, Butler, P. Z. S. 1893, p. 670, pl. lx. fig. 8.

♂, Kondowi, 4110 feet alt., Lower Nyika, April 11th; Kambwiyi, 3800 feet alt., Lower Nyika, April 20th and Jan. 21st, 1895.

'Orange and black Skipper" (*R. C.*).

92. HETEROPTERUS DECIPIENS, sp. n. (Plate VI. fig. 7.)

Much resembles the preceding species on the upper surface; he base of the wings streaked with orange-yellow irrorations; the band bright golden orange; the terminal spot connected with it, not separate as in *H. formosus*; the secondaries show a transverse bar at the end of the cell, a longitudinal dash below the latter and six or seven submarginal spots, the first, third, and fourth largest, all orange and squamose: the body above is like that of *H. formosus*, but below it is deep brown as above, the palpi and centre of pectus with golden-orange hairs; the wings below are dark brown, the primaries alone showing a golden-orange band, formed as above, but not so deep in colour. Expanse of wings 30 millim.

Kondowi, Lower Nyika, April 6th, 1895.

"Orange-barred black Skipper" (*R. C.*).

93. CYCLOPIDES MIDAS.

Cyclopides midas, Butler, P. Z. S. 1893, p. 671; 1895, pl. xv. fig. 6.

♂, Kondowi, 4110 feet alt., Lower Nyika, April 11th, 1895.

"Orange-spotted dark brown Skipper" (*R. C.*).

94. CYCLOPIDES QUADRISIGNATUS.

Cyclopides quadrisignatus, Butler, P. Z. S. 1893, p. 670, pl. lx. fig. 9.

♂, Nyankowa Mt., 5425 feet alt., Nyika, April 10th; Kondowi, 4110 feet, April 11th; ♀, Kantorongondo Mt., 5925 feet, April 15th; ♂, Cheni-Cheni Mt., 5500 feet, Nyika, April 17th, 1895.

"Orange-spotted black Skipper" (*R. C.*).

In the specimens now sent, which are in good condition, the spots are bright ochreous and rather more numerous (especially on the secondaries) than in the type: indeed they more nearly approach typical *C. metis*; the wings are, however, decidedly blacker than in that species and there are never more than seven distinct small spots on the secondaries. This would appear to be the representative of *C. metis* in Central Africa.

95. KEDESTES CAPENAS.

Cyclopides capenas, Hewitson, Descr. Hesp. p. 43 (1868).

♀, Lumpi R. valley, 3500 feet alt., Lower Nyika, April 21st, 1895.

"Orange and black speckled underwing Skipper" (*R. C.*).

This rare species was previously only represented in the general collection by one male specimen.

96. PADRAONA ZENO.

♀. *Pamphila zeno*, Trimen, Trans. Ent. Soc. London, 3rd ser. vol. ii. p. 179 (1864); ♂ ♀. South Afr. Butt. vol. iii. p. 313, ♀ pl. xii. fig. 2 (1889).

Var. ♂ ♀. *Padraona watsoni*, Butler, P. Z. S. 1893, p. 671.

Kondowi, 4110 feet alt., Lower Nyika, April 6th and 11th; Kantorongondo Mt., Nyika, 6975 feet alt., April 16th, 1895.

"Orange and brown spotted Skipper" (*R. C.*).

The specimens now received link *P. watsoni* to *P. zeno*, the orange cell-spot of the primaries, which in *P. watsoni* extends almost to the base, proving it to be variable; the discal band of the secondaries also varies in width, and the under-surface colouring from the bright yellow with badly defined darker bands of *P. watsoni* to the duller brown banded character of *P. zeno*: all the examples now received having been taken in April, the differences cannot be seasonal.

97. GEGENES LETTERSTEDTI.

Hesperia letterstedti, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, p. 49.

♂ ♂, Nyankowa Mt., 5575 feet alt., Nyika, April 9th, 1895.

"Smoky green Skipper" (*R. C.*).

98. BAORIS FATUELLUS.

Pamphila fatuellus, Hopffer, Monatsber. k. Akad. Wiss. Berlin, 1855, p. 643; Peters' Reise n. Mossamb. v. p. 417, pl. 27. figs. 3, 4 (1862).

Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th; Cheni-Cheni Mt., Nyika, 6430 feet alt., April 17th, 1895.

"Greenish Skipper" (*R. C.*).

99. BAORIS INCONSPICUA.

Hesperia inconspicua, Bertoloni, Mem. Acc. Bol. 1849, p. 15.

Kambwiyi, Lower Nyika, Jan. 21st; Lower Nyika, Feb. 2nd, 1895.

"Green Skipper (decided yellowish-green)." "Dark green speckled-with-white Skipper" (*R. C.*).

100. BAORIS, sp. (A continental form of *B. umbrata*.)

This species, which is almost certain to have been named by either M. Mabille or Herr Plötz, differs from *B. umbrata* of the Island of Johanna only in its slightly superior size, more elongated wings, and blacker colouring; in markings, pale fringes and palpi, and the pale areas below it agrees, excepting that the pale colouring is less pronounced.

Kondowi, Lower Nyika, April 4th, 1895.

101. HALPE NIGERRIMA.

Halpe nigerrima, Butler, P. Z. S. 1893, p. 672.

Kambwiyi, Lower Nyika, Jan. 2nd, 1895.

"Dark green Skipper (speckled with white)" (*R. C.*).

102. HALPE AMADHU.

Pamphila amadhu, Mabille, Comptes Rendus Soc. Ent. Belge, p. lxxviii (1891).

Kambwiyi, Lower Nyika, Jan. 21st, 1895.

"Greenish Skipper" (*R. C.*).

These species of *Halpe* never seem to come to hand in numbers, one or two examples in a large collection are all that we ever receive.

103. PERICHARES ALBICORNIS, sp. n. (Plate VI. fig. 8.)

♂. Primaries sericeous olive-brown, sometimes suffused with purplish, the basi-costal area more or less suffused with cupreous; interno-basal area clothed with olive-green hairs, fringe whity brown; two yellowish-white superposed spots within the end of the cell, sometimes connate; a small more or less triangular spot at the base of the second median interspace, a transversely oblong spot below the latter and crossing the first median interspace; two or three small and yellower hyaline spots, separated by the subcostal branches, towards apex, and an opaque bright yellow oblong or oval spot just above the middle of the submedian vein: secondaries deep sericeous olive-brown, central area occupied by a slightly paler patch having a somewhat reddish tinge; base clothed with green hairs, abdominal area with greenish and bronze hairs; fringe whity brown: upper surface and front of palpi, head above, and patagia chocolate-brown; antennæ pure white, emitted from a whitish tuft on the vertex of the head. Primaries below with the costal border and a subapical patch golden copper-brown, the central area greyish black, the internal area paler with a large central diffused whitish spot; hyaline spots necessarily as above; external border from apex to first median branch rosy greyish brown: secondaries golden copper-brown, slightly darker on the costa and in a small subapical patch bounded by two black dots; three ill-defined brown spots in a triangular position across the basal area, a black dot on the upper discocellular and a small black spot beyond; a dust-grey interno-median stripe commencing in a point at base and gradually expanding to outer margin; an irregular purplish-grey streak edged with blackish crossing the disc from the interno-median streak and tapering to apex; outer border paler than the remainder of the wing, bounded internally by an ill-defined brownish line and enclosing two or three triangular grey marginal dots: palpi below dull straw-yellow; antennæ white, with a grey patch on the club; neck and edges of eyes white; pectus densely covered with dull tawny hair, venter rufous brown. Expanse of wings 40 millim.

♂ ♂, Kondowi, Lower Nyika, 4110 feet alt., April 4th to 6th, 1895.

"White antennæ Skipper" (*R. C.*). One specimen collected by Mr. William Murray of the Livingstone Mission.

This is the species of which we received a damaged example from Fwambo (see P. Z. S. 1895, p. 266. n. 63). M. Mabille says that his specimen is a male; and, although this may be an error, the number and character of the spots in the present species differ considerably and are evidently tolerably constant: the sexes rarely show so marked a difference in this group.

104. Perichares telisignata, sp. n. (Plate VI. fig. 9.)

♂. Purplish black; primaries with markings nearly as in the preceding species, but the discoidal spots united into one and only separated from the two median spots by the veins; they thus form a single hyaline patch as in *Coladenia dan*; the subapical spots also form a short transverse trifid bar, and the yellow spot near inner margin is slightly paler; the secondaries are small, without markings, with greenish hairs at base and white fringe; body blackish brown in front, but the thorax and abdomen densely covered with grey-greenish hair; antennæ pure white, with black terminal hook. Primaries below dull black; the costal border, which expands into a broad subapical patch, fiery copper-brown, internal area grey, with a large central diffused dull white patch; external border to below second median branch rosy brown; hyaline spots as above: secondaries fiery copper-brown, purplish black on internal area; an indistinct blackish discal bar, parallel to outer margin; wing crossed by a clear sharply defined white ⌐-shaped character; fringe white: palpi chalky white, as also the front of the tibiæ and tarsi of first pair of legs; pectus blackish, venter densely clothed with grey hairs, anal tufts whitish. Expanse of wings 32 millim.

Kantorongondo Mt., Nyika, 5900 feet, April 15th, 1895.

This is so distinctly marked a species that, if properly described, I could hardly have failed to identify it.

105. Rhopalocampta forestan.

Papilio forestan, Cramer, Pap. Exot. iv. pl. cccxci. E, F (1782).

Henga, Feb. 1st, 1895.

"Great black, white, and orange Skipper" (*R. C.*).

Heterocera.

Only thirteen Moths were in the collection, one or two of which had unfortunately been attacked by the larvæ of a Micro-Lepidopteron, which were discovered still at work after the specimens had been mounted: all the species nevertheless are sufficiently well-preserved for determination.

106. Macroglossa trochilus, var. trochiloides.

Macroglossa trochiloides, Butler, P. Z. S. 1875, p. 5.

Nyankowa Mt., Nyika, 6500 feet alt., April 9th, 1895.

"Green and orange Humming-bird Hawk" (*R. C.*).

This form of *M. trochilus* appears to cross the African continent from west to east; it differs from the southern type principally in the blacker and therefore better-defined outer border to its secondaries. There can, however, be no doubt, from the fact that an example of the southern type was obtained by Mr. Scott Elliot, that the ranges of the two forms overlap in South-eastern Africa: *M. trochiloides* therefore will probably prove to be a dimorphic form of *M. trochilus* which becomes permanent on the N.W. coast.

107. Melittia æneascens, sp. n. (Plate VI. fig. 10.)

Allied to *M. natalensis*; primaries slightly narrower, purplish indigo, with the same transparent spot between the second and third median branches; secondaries hyaline with black veins, narrow black margins, and dust-grey fringe paler at the edge; head olive-brown; antennæ purplish black above, shining straw-yellow below, and deep ferruginous in front; collar and thorax golden brassy, with green reflections; abdomen purplish indigo, with dorsal golden brassy transverse bands on the front of each segment: primaries below becoming brownish grey from beyond the cell; otherwise the wings are as above: palpi and face white stained with yellow; pectus slaty black, the sides in front and the front legs golden brassy, tibial and tarsal joints reddish; middle legs golden to the end of the tibia, tarsus purplish black; posterior legs blackish brown, the tibial joints densely clothed with long black, red, and white hairs; tarsi black externally, white internally. Expanse of wings 37 millim.

Karonga, W. coast of Lake Nyasa, Feb. 28th, 1895.

"Black-plumed Humming-bird. Taken in tent fluttering round candle-lantern by night" (*R. C.*).

When in fresh condition this must be an exceedingly beautiful insect.

108. Xanthospilopteryx superba.

Eusemia superba, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 141, pl. 13. fig. 3 (1875).

♂, Ngerenge Plain, W. coast of Lake Nyasa, Feb. 24th, 1895.

"Crimson-underwing Tiger" (*R. C.*).

The smallest example of this beautiful Agaristid that I have seen.

109. Ægocera meneta.

Noctua meneta, Cramer, Pap. Exot. i. pl. lxx. D (1775).

There is no label to this example.

110. SYNTOMIS CERES.

Syntomis ceres, Oberthür, Études, iii. p. 33, pl. 3. fig. 5 (1878).

Kambwiyi R., Lower Nyika, Jan. 21st and Feb. 2nd, 1895.

"Scarlet and blue-bodied Forester" (*R. C.*).

111. METARCTIA RUBRA.

Anace rubra, Walker, Lep. Het. vii. p. 1720 (1856).

♂, Kaparo, Songwi R. plains, W. coast of Lake Nyasa, Feb. 26th, 1895.

"Orange and grey striped Ermine" (*R. C.*).

112. ARGINA AMANDA, var. OCELLINA.

Deiopeia ocellina, Walker, Cat. Lep. Het. ii. p. 571 (1854).

♀, Kwereru Hill, Deep Bay, April 22nd, 1895.

"Orange and black spotted. Full of lemon-coloured ova" (*R. C.*).

113. DEIOPEIA PULCHELLA.

Tinea pulchella, Linnæus, Syst. Nat. i. p. 534 (1758).

Deep Bay, March 5th, 1895.

"Pink, black, and white speckled. A day-flier apparently: taken on flowers in hot sunshine" (*R. C.*).

I am surprised that Mr. Crawshay did not recognize this as a rare British moth, usually known as the "Crimson-speckled Footman."

114. LOPERA CROCATA, var.?

Liparis crocata, Herrich-Schäffer, Ausl. Schmett. pl. 24. fig. 112 (1854).

♂, Kondowi, Lower Nyika, April 6th, 1895.

"Raw silk-coloured Ermine" (*R. C.*).

The single example obtained appears to have been at some time very wet, so that it is impossible to decide whether or not there have been any of the scarcely deeper bands across the primaries which a lens shows plainly on the front wings of *L. crocata*; the orange spot at the end of the cell is more regularly circular than in most examples and is not dotted with black. Until better specimens are received, it is not safe to assume that we have to do with a species distinct from *L. crocata*.

115. A LIMACODID MOTH.

The single specimen obtained was a female, not quite perfect: the neuration is slightly unusual, veins 7 and 8 of the front wings being emitted, from a footstalk, from 9. The sexes of some of the Limacodidæ differ so much from the males, that it is hardly safe to name an unpaired female, as it may subsequently prove to be merely the other sex of some well-known male insect.

♀, Lower Nyika, Feb. 2nd, 1895.

"Eggar moth" (*R. C.*).

116. DRASTERIA JUDICANS.

Ophiusa judicans, Walker, Lep. Het. xv. p. 1831 (1858).
Kondowi, Lower Nyika, April 4th, 1895.
"Dusky grey moth" (*R. C.*).

117. HETERABRAXAS ROSEOVITTATA.

♀. *Heterabraxas roseovittata*, Butler, P. Z. S. 1895, pl. xliii. figs. 2, 3.

♂. The antennæ have long radiating branches; the black markings on the primaries are better defined than in the female; the secondaries are straw-yellow, with a few scattered black spots, differing entirely on the opposite wings. Expanse 41 millim.

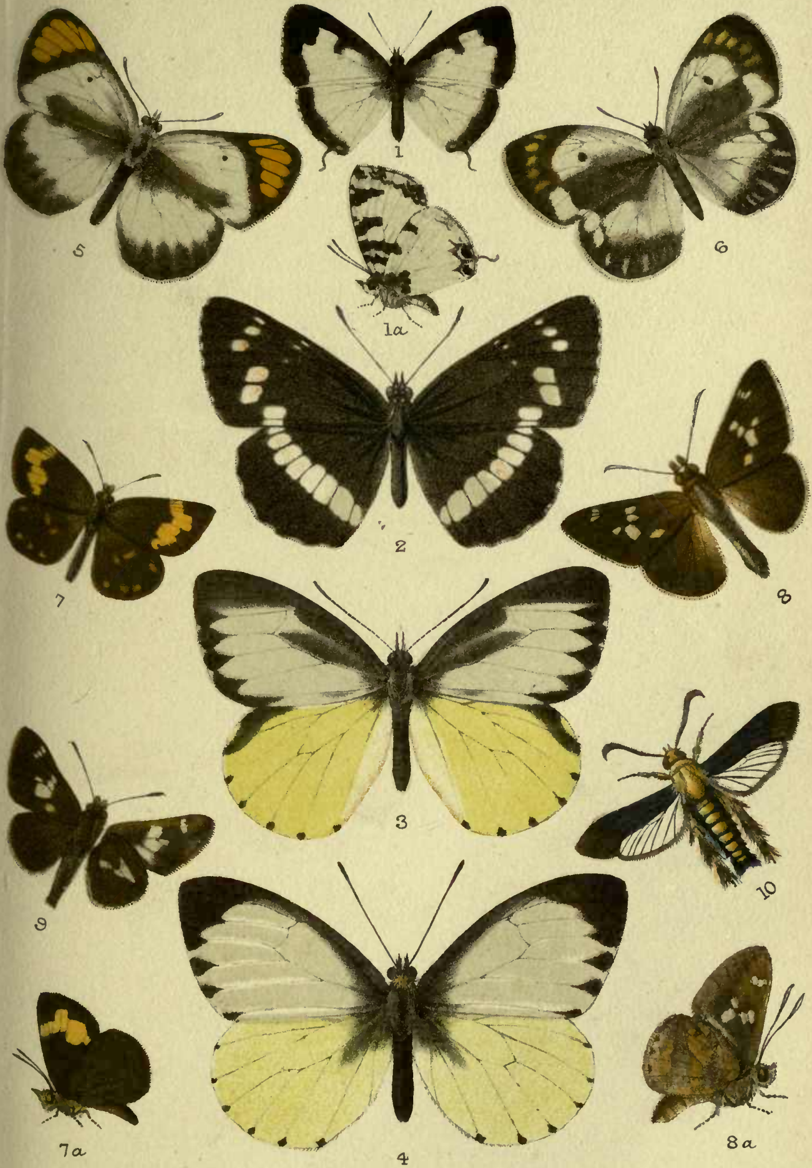
Not labelled: body eaten out by caterpillar of Tineid.

This is the example referred to in my previous paper and figured.

EXPLANATION OF PLATE VI.

Fig. 1. *Hyreus virgo*, p. 121.
2. *Neptis incongrua*, p. 112.
3. *Mylothris narcissus*, var. *dentatus*, p. 124.
4. ,, *crawshayi*, p. 124.
5, 6. *Teracolus infumatus*, p. 128.
7. *Heteropterus decipiens*, p. 130.
8. *Perichares albicornis*, p. 132.
9. ,, *telisignata*, p. 133.
10. *Melittia æneseens*, p. 134.

P.Z.S.1896. Plate VI.


5
1
6
1a
2
7
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3
10
9
7a
4
8a

E.C.Knight del. et lith.

West, Newman chromo.

New Lepidoptera from Nyasa-land.

Febr. 1896

V. *Seasonal Dimorphism in African Butterflies.* By ARTHUR G. BUTLER, Ph.D., F.L.S., etc.

[Read February 3rd, 1896.]

MR. GUY A. K. MARSHALL'S "Notes on Seasonal Dimorphism in South African *Rhopalocera*" (Trans. Ent. Soc. Lond., 1896, p. 551), as observed by him in Mashunaland, are of great interest and form a contribution to science which will be very useful to future workers, as exhibiting a part of the truth relating to this engrossing subject; but a part only, as it is now my object to show.

Mr. Marshall has evidently misunderstood my remarks respecting seasonal and local modifications of species; he has indeed wholly missed my point, which is this:—in a country which is hot and dry throughout the year wet-season forms will be naturally extremely rare (if present at all), whereas the reverse will be the case in an uniformly moist climate. Now where a species ranges throughout Africa to Arabia, it exhibits in one locality a single type (say dry-season), and perhaps in abnormal seasons when light showers fall, a second type (intermediate between dry and wet); or if the country be moist a wet-season and an intermediate-season form occur, but no dry-season form. Such is frequently the case in Sierra Leone.

In countries where the wet season is out of all proportion to the dry, the wet-season form of a species will be naturally better marked; and the reverse will hold good where the dry season has the advantage.

It is very likely that Mr. Marshall may be correct in his opinion, based upon practical experience in Mashunaland, that, in *Acræa*, I have called the dry-season form "wet," and the wet-season form "dry,"* but I am satisfied that in an unusually dry country the so-called "wet-season form" is sometimes identical with the so-called "dry-season form" of a moister country. Indeed, the conditions, as far as the absence of one modification and presence of a new one are concerned, are practically very similar to those which obtain in the N. American Lycænid, *Cyaniris pseudargiolus*, beautifully worked out by Mr. W. H. Edwards (Butt., N. Am., ii., pp. 315 *et seq.*).

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* He however makes an exception in the case of *A. bomba* (= *induna*).

Mr. Marshall is quite correct in saying that it is extremely difficult to define "the specific differences of butterflies merely from a series of museum specimens when not backed up by a practical knowledge of the habits and range of the species involved." But, on the other hand, it is impossible for a worker in any one part of so vast a country as Africa arbitrarily to settle, to the satisfaction of everyone, the extent of variation of any one widely distributed species under seasonal and climatic conditions. That Mr. Marshall has amply proved this I can readily show; and I do so, not with any desire to detract from the value of his observations, as applied to South African butterflies when in southern S. Africa, but to prove that the conditions differ in the same species when found only so far northward as Nyasaland.

In my notes on "Seasonal Dimorphism in *Acræa*" I took what I regarded as the extreme dry and wet developments of the species, not of that phase of the species represented either in the Cape Colony or in Mashunaland; whether the intermediate forms occur as the dry-season form in one part of Africa, the wet-season form in another, as the sole representatives of the species in a third, or not at all in a fourth, is perfectly immaterial. As developments of the species, intimately connected with and incapable of separation from it, they must be taken into account; but I frankly admit that it is extremely probable, as already granted, that I ought to have called the dry-season form "wet," and the wet form "dry." The fact, therefore, that one of my seasonal forms does not occur in conjunction with the extreme southern form throughout its range, or that it occurs apart from the latter at any part of its range, is not enough to show that it is not a seasonal phase of a species in some part of Africa.

The species of *Acræa* mentioned in my former paper will be now separately referred to.

(1). *A. anacreon,* Trim. = *A. bomba,* Grose-Smith.

As Mr. Marshall observes (p. 564), when he examined the British Museum collection there were five specimens labelled as *A. bomba* (= *induna*), four of which I have myself proved to be *A. anacreon,* inasmuch as the apical patch is not filled in, though more heavily marked than in typical *A. anacreon.* When, however, Mr. Marshall asserts that the female, admitted to be *A. induna,* has no connexion with the latter, he is certainly wrong, for we have since received the male, agreeing perfectly with Mr. Grose-Smith's figure and tolerably closely with Mr. Trimen's. This example was captured together with a typical male of *A. anacreon,* by Mr. Crawshay, on the 15th September, 1895, on the Chuona River, Mwewe's Town, Unyika. If there were any constant difference of pattern on the under surface of the wings between *A. anacreon* and *A. bomba* (= *induna*), it would be possible to force oneself to credit the distinctness of these forms, even though they were captured simultaneously. But there is no constant difference, and absolutely the only distinction between these two specimens, on the under surface, consists in the absence, in the *A. anacreon* type, of the three dots beyond the cell of the primaries, which (in that type) are usually strongly defined. As a matter of fact the only constant difference between typical *A. anacreon* and typical *A. bomba* consists in the absence or presence of the tawny submarginal spots on the apical area of the primaries above. I am therefore certain, in spite of these two forms having been taken together (which Mr. Marshall frankly admits to be immaterial and due to the overlapping of seasons), that *A. anacreon* and *A. bomba* represent the extreme developments of one species in Nyasaland, whether they do or not in southern S. Africa.

(2). With regard to the seasonal character of *A. periphanes* and *A. guillemei,* Mr. Marshall, having seen two specimens of the former in our collection, has his doubts thereon; but he does not comprehend the want of the heavy marginal border in the secondaries. I am now able to resolve those doubts, as other specimens (linking the two in an extraordinary manner) have been since received; these specimens prove beyond all question that the two extremes belong to one species in which the border of the secondaries is sometimes lightly and sometimes heavily marked, as in *A. anacreon*. As with that species also there are no constant differences of pattern on the under surface of the wings.

(3). *A. doubledayi*, Guér. = *A. dircæa*, Westw.

Westwood's description agrees well with the insect which I identified as that species, and which, I have no doubt, is a seasonal form of *A. doubledayi*. Mr. Marshall, however, when in England, informed me that he had seen Westwood's type and found it identical with *A. caldarena*, Hew.; this was sufficient for me, and I immediately altered the identification. In his paper, however, Mr. Marshall speaks of Westwood's insect as a seasonal form of *A. caldarena*, which can be hardly possible, since Westwood says that it is "allied to *Acr. oncæa*, but with a very well defined broad black apex to the primaries"; this exactly tallies with the form of *A. doubledayi* (=*oncæa*) which I identified. Of the latter we now have additional examples linking it to typical *A. doubledayi* beyond all question, and received in the same collection with the white-banded female of that species. Mr. Marshall's recently published statement has made me feel that I should like personally to compare Westwood's type both with *A. caldarena* and the form of *A. doubledayi* with black apex.

(4). *Acræa stenobea*, Wallengr. = *A. caldarena*, Hew.

Of this identification I never felt very certain, because we have a wet development of *A. stenobea* in *A. cæcilia* of the West Coast. Both *A. cæcilia* and *A. stenobea* occur rather commonly in S.-W. Africa.

When Mr. Marshall made his remarks respecting my "lamentable confusion as to what are real specific differences in *Acræa*," "the fallacy of my supposition," etc., he had not had the advantage of studying our very fine series. Had he done so he would have discovered that *A. lygus*, Druce (= *albomaculata*, Weym.) was a form of *A. stenobea* varying in the direction of *A. cæcilia*, and occurring with it on the Congo. Mr. Trimen's description does not accurately describe it, inasmuch as the basal blackish suffusion is more pronounced on the forewing in typical *A. lygus*, than in any other form of that variable species, *A. cæcilia*. The examples from the "Eastern extremity of Cape Colony and Basutoland," if such examples of

A. lygus exist (which is not directly stated by Mr. Trimen) may link *A. stenobea* to typical *A. lygus,* and so to *A. cæcilia,* but that they are a seasonal form of it in the extreme south seems exceedingly improbable; they are far more likely to be a mere albinistic sport, such as occurs in many other species of *Acræa.* This seems the more probable from the fact that, as far as I have seen, they are always females.

It is not at all a conclusive argument that, because in southern South Africa *A. stenobea* has not been found associated with *A. caldarena* and because, in Mashunaland, the latter occurs the whole year round without *A. stenobea* making its appearance, the two do not occur as seasonal forms of one species in any part of Africa. Nevertheless, as all the forms of *A. cæcilia* appear to occur chiefly in Southern and South-Western Africa (although typical *A. cæcilia* is also found in Abyssinia), I think the claim of *A. caldarena* to be regarded as distinct has a firm basis. Regarding this species as a wet-season form, we then still have to look for its dry development; and this leads me to point out to Mr. Marshall that, when he assumes that each species varies seasonally in the same way throughout its entire range, or, because it does not vary in one district, it therefore varies nowhere, he makes an assumption which can be easily disproved by anybody in charge of a sufficiently large and *carefully* collected series of specimens.*

When we see that *A. zetes* is the extreme wet development in Sierra Leone of that brightly coloured type of *A. menippe* found at Uganda, and that *A. pseudegina* is the extreme wet development in Sierra Leone of the southern *A. natalica*; whilst in both cases intermediate forms occur, sometimes side by side with the wet form, and sometimes, to the exclusion of both extremes, in intermediate localities, we must be very careful not to be too dogmatic in our statements respecting the constancy of either the species themselves, or their seasonal varieties.

(5). *A. pudorina,* Staud. = *A. chæribula,* Oberth.

Accepting Mr. Marshall's correction as to the black-tipped forms being "wet" and the forms without black tips "dry," it is curious that in this species he seems to reverse the order, telling us that he captured *A. acrita* in the dry season, and referring me to a paper of Mr. Trimen's which distinctly suggests that the slightly marked type (which, by the way, is almost the same as *A. pudorina*) is the winter form of the species captured by Mr. Marshall during the heavy rain; and he says that, by quietly ignoring this, I have fallen into the error of confusing local with seasonal variation. If Mr. Trimen's insect were the wet-season form of Mr. Marshall's, he would have followed my original course; but what he has done is to confound seasonal and local forms.

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* By which I mean a series labelled, not only with exact localities, but with the dates of capture, and altitudes.

Admitting that *A. pudorina* is probably the extreme dry- (not wet-) season form of the species, the form described and figured by Mr. Trimen may occur with it as its wet-season form; whilst if *A. acrita* occurs (as in Nyasaland it undoubtedly does) with *A. chæribula*, the latter would be the wet-season, and *A. acrita*, as Mr. Marshall says, the dry-season form.

From Nyasaland however we receive *A. chæribula* (wet-season), *A. acrita* (intermediate), and *A. pudorina* var., of Mr. Trimen's plate (dry-season), which shows that in dogmatizing respecting seasonal forms, locality must be taken into account.

My decision respecting this species throughout its range remains as it was, allowing only for the substitution of "dry" for "wet"; and Mr. Marshall's assumption that, if I had been correct, he ought to have taken *A. pudorina* and not *A. acrita* in Mashunaland is based upon a confusion of ideas between local and seasonal forms. To put the matter briefly:—If in any part of Africa *A. chæribula* does not exist with *A. acrita*, the extreme wet-season form of the species is not developed in that region, and if *A. pudorina* does not exist, the extreme dry-season development of the species is wanting, but this does not alter the fact that these intimately connected forms are all one species. Their differences are all limited to the black apex of the primaries above; the borders of the secondaries vary too much in most species of *Acræa* to be relied on, and these variations are not limited either by season or locality.

Respecting the seasonal forms of *Precis* (= *Junonia*) I have spoken elsewhere. They may be quite correct as regards Mashunaland; indeed I had already published my idea as to *J. nachtigali* being a seasonal form of *J. artaxia* when we received a collection from Nyasaland distinctly proving that both occurred together in splendid condition at the same season. I have also proved that *J. simia*, *J. trimeni*, and *J. cuama* fly there together throughout a considerable portion of the year, and certainly both in the dry and wet seasons; this is somewhat disconcerting.

In conclusion, I would observe that, whether the forms of *Acræa* with black apex be proved by breeding to be a seasonal development of those which lack it, or not, there is not the slightest doubt that they are varietal forms, and not distinct species; all of them, with the exception of *A. caldarena*, being already linked together by intergrades in the British Museum series.

9TH APRIL, 1897.

March 1896

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xvii., *March* 1896.

Note on the Synonymy of Huphina lanassa, *a common Australian Butterfly of the Subfamily* Pierinæ. By ARTHUR G. BUTLER, Ph.D. &c.

SO much confusion has arisen in the synonymy of this species that, after carefully working it out, I feel no time should be lost in putting it straight.

The species was described by M. Boisduval in his 'Species Général' (1836), evidently from an old female example from New Holland in which the under surface of the secondaries had darkened to ochreous with age, and in which there chanced to be no submarginal spots (we have a specimen in which the secondaries show only one spot on the under surface).

M. Boisduval considered his specimen to be a male; but he so often blundered in sexing his species, that no reliance can be placed upon the statement "Nous n'avons pas vu la femelle." The description "la bordure des supérieures assez large" can hardly apply to a male, unless it be assumed that his method of description was loose, because an equally broad border to that of males of this species is (in other descriptions) regarded by M. Boisduval as "de largeur moyenne."

In 1852 M. Lucas described a species, also from New Holland, under the name of *Pieris nabis*, the male of which was of the variety having only two subapical spots on the border of the primaries, the female only differing from typical "*Pieris lanassa*," Boisd., in having several yellow spots on the border of the secondaries below.

In 1865 Felder described the female again, but from Fiji, under the name of "*Pieris perithea*," and compared it with the *P. perimale* of Donovan.

At the same time and on the same page he described a male from Australia, characterized by having the apical area of the primaries and the entire basal area of the secondaries on the under surface whity brown, under the name of *P. periclea*.

Lastly, in 1867 Wallace described a male from Moreton Bay in which the apical area of the primaries and entire basal area of the secondaries on the under surface were "earthy brown with an orange tinge."

Wallace compared his new species with the *Pieris nabis* of Lucas and *Papilio perimale* of Donovan, but he failed to recognize the latter owing to the fact that the type was evidently a female. The male of Donovan's species is, I have no doubt, the species in Hewitson's collection which Wallace incorrectly identified as Felder's *P. periclea*. There are two examples from New Caledonia, differing from each other exactly as *P. narses* and *P. nabis* differ; but, curiously enough, Wallace does not consider them distinct, as he logically should do, but observes:—"These two specimens indicate a variable species."

It is absolutely certain that Felder's "*P. periclea*" cannot be the species from New Caledonia, which in form of wing corresponds with its presumed female "*P. perimale*," for Felder states that it agrees with his *P. perithea*:—"die vorbeschriebene Art, mit welcher die Flügelform übereinstimmt."

In 1869 Herrich-Schäffer described and figured a *Huphina* as *P. periclea*, and, later, he reproduced the plate coloured as part of an Appendix to his 'Aussereuropäische Schmetterlinge.' The coloured figure is at once seen to be identical with Wallace's *P. narses*, the colouring below not being whity brown, but earthy brown.

When a large series of *Huphina lanassa* is examined, it becomes evident that the species is tetramorphic; the under surface of the secondaries and apex of primaries may be white, yellow, whity brown, or earthy brown, but the upper surface only varies in the number of white spots on the black border. From what we now know of the seasonal dimorphism of white butterflies, it is almost certain that the earthy-brown and whity-brown types are dry-season forms and the yellow and white types are wet-season forms.

In like manner the two males of *P. perimale*, which Wallace regarded as an aberrantly variable species, represent the ordinary dry- and wet-season forms, of the first of which Donovan's type is typical. *P. perimale*, however, is more nearly allied to my *Huphina terranea*, of which we now possess both types from Lifu, than to *Huphina lanassa*.

The synonymy of *H. lanassa* corrected to date will be as follows:—

Huphina lanassa.

♀. *Pieris lanassa*, Boisduval, Sp. Gén. Lép. i. p. 477 (1836).
♂ ♀. *Pieris nabis*, Lucas, Rev. et Mag. de Zool. 1852, p. 326.
♀. *Pieris perithea*, Felder, Reise der Nov., Lep. ii. p. 169 (1865).

Australia, Baudin Island, Fiji.

Dry-season form.

♂. *Pieris periclea*, Felder, Reise der Nov., Lep. ii. p. 169 (1865).
♂. *Pieris narses*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 333, pl. vi. fig. 3 (1867); Herrich-Schäffer, Stett. ent. Zeit. 1869, p. 76, pl. i. fig. 4; Auss. Schmett., App. p. 3, pl. i. fig. 103 (1869), as *P. periclea*.

Australia, Baudin Island.

In the wet-season form there are all gradations between the extremes of yellow and white, whilst *P. periclea* is a transitional form between the latter and *P. narses*; therefore, if the facts proved as regards the seasonal changes in colouring in other genera of Pierinæ should be found not to be true of *Huphina*, the above forms would still have to be regarded as variations of one species.

May 1896.

From the Annals and Magazine of Natural History, Ser. 6, Vol. xvii., *May* 1896.

Notes on the Pierine Butterflies of the Genus Daptonura, *with Descriptions of new Species.* By A. G. Butler, Ph.D., Senior Assistant-Keeper, Zoological Department, British Museum.

In carefully supervising the synonymy of *Daptonura* I noted that the outline of the wings, the width of the outer borders, and the inner edging of the latter appeared to be constant and reliable characters; but the mere tint of the wing-surface varied from white to brimstone and from brimstone to saffron, these modifications being best illustrated by such species as *D. florinda* and *D. isandra.*

In *D. limnoria*, Godt. (*limnobia*, Swains.), the secondaries of the male vary in tint from pale brimstone to canary-yellow, but the orange on the border is invariably represented by a series of saffron or orange spots. Hübner's figures (Samml. exot. Schmett. ii. pl. ccxxxii.) represent a very distinct species, for which, years ago, I proposed the name *D. Hübneri*, writing it upon a label and pinning it into the collection; but if I published the correction it has never been quoted, and consequently I cannot refer to it.

Hübner's insect differs in both sexes from *D. limnoria*, as will be at once seen by comparing Swainson's admirable illustration of the latter with the plate in the 'Sammlung.'

Daptonura Hübneri.

♂. Decidedly smaller than *D. limnoria*, the black apical border narrower, with regularly dentate-sinuate inner edge; the secondaries bright sulphur-yellow, with broad orange outer border and linear black edging.

♀. Smaller than that sex of *D. limnoria*, the black cuneiform bar across end of cell connected by a streak (which passes along the third median branch) with the black outer border; the latter narrower on the costa than in the common species and gradually decreasing in width to inner margin; the secondaries as in the male, excepting that the orange external area and black edging are wider.

♂, "Rio R." In coll. Hewitson.

The female I know only from Hübner's illustration; it is said to come from Brazil. The locality is probably Rio Real in Northern Bahia.

Daptonura inæqualis, sp. n.

Allied to *D. leucanthe*; decidedly smaller, the outer margin of primaries straighter, the black apical border decidedly narrower, with zigzag dentated inner edge; only the fringe of secondaries (not the margin also) blackish; male above white, female bright orange washed with canary-yellow on costa and in cell of primaries: the male below nearly resembles *D. leucanthe*, but the blackish line on the end of the discoidal cell of primaries is either ill-defined or wanting; the apical border also is only indicated through the wing and the veins crossing it are barely or not at all blackened; the apical area of these wings and the whole surface of secondaries are far more buff in tint, and the veins of the latter wings are black to the base; the wings themselves are more rounded, less produced at anal angle than in *D. leucanthe*: the female below is paler (more golden crocus-yellow) than above, in veining it corresponds with the male.

Expanse of wings, ♂ 63, ♀ 66 millim.

♂ ♀, E. Peru (*Whitely*); ♂, Bolivia, N. side of the Cordillera de Cochabamba (*Bridges*). B.M.

Var. ?—Black, veining obsolete on both surfaces; outer margin of primaries slightly more inarched; inner edge of apical border sinuated.

♂, Bolivia (*Bridges*); ♂, Cuenca, Ecuador (*Fraser*). B.M.

Daptonura latilimbata, sp. n.

♂. Allied to *D. peruviana;* basal two thirds of primaries milk-white; costal margin and apical third black-brown, the inner edge of the latter zigzag, commencing almost parallel to the end of the cell and continued obliquely to near the extremity of the first median branch, whence it tapers more abruptly to the extremity of the submedian vein; fringe towards external angle white: secondaries milk-white, with black-brown outer border as wide as in the female of *D. eurymnia*, but not spotted: body normal. Wings below with the black-brown borders broader, shining dark copper-brown; a black-brown cuneiform streak from costa closing the discoidal cell of primaries; basal lobe of secondaries orange, and sides of pectus washed with the same colour as in *D. peruviana.*

Expanse of wings 76 millim.

Ecuador (*Buckley*). Coll. Hewitson.

Daptonura Harti, sp. n.

Commonly confounded in collections with the New Granadian *D. eurymnia*, usually a little smaller, and invariably with the outer margin of primaries more concave; the external border of these wings in the male slightly narrower, especially below the second median branch, the inner edge of this border widely sinuous, but not regularly sinuated as in the New Granadian species: the secondaries tinted with sulphur-yellow; the dark brown outer border much narrower, tapering to a point at each extremity, so that only three out of the usual five squamose whitish submarginal spots are clearly emphasized: on the under surface the brown borders differ as above, and the yellow is a clear brilliant canary instead of gamboge; the basal lobe of secondaries is barely tinted with saffron, instead of being deep orange. In the female the differences are less marked, but the primaries above are pale brimstone and the secondaries bright brimstone-yellow, far brighter than in *D. eurymnia*: on the under surface the borders are slightly narrower than in the female of the latter species, the primaries are brimstone-yellow, with the costal area deepening to canary; the secondaries are very deep canary-yellow, with a slight tint of saffron on the costal edge of the basal lobe, whereas in *D. eurymnia* these wings are much darker, cadmium-yellow, with deep saffron basal lobe.

Expanse of wings, ♂ 58–70, ♀ 59 millim.

Trinidad (*Hart, Broadway, and Caracciolo*). B.M.

Judging by the female differences alone, I should never have supposed this to be a distinct species; but the male characters are much more markedly dissimilar from the form of the mainland; the latter ranges from Bogota to Venezuela, but whether to the coast I do not know.

The true *D. eurymnia* is like a white edition of *D. polyhymnia*, and I am satisfied that the two are only forms of one species; in like manner I still believe that *D. monstrosa* is only a form of *D. florinda*, inasmuch as the fact that Dr. Staudinger has described four types, all differing, clearly indicates inconstancy in the ground-colouring of the wings. The Hewitson collection contains a male and two females, none of which agree with the figures in the 'Biologia'—they are all what botanists know as "selfs." Then, again, the *D. panamensis* of Staudinger is represented by the opposite sexes of the two forms *D. florinda* and *D. monstrosa*, as figured in the 'Biologia,' the male being described as having the primaries white and the secondaries citron-yellow, the female as having the primaries citron and the secondaries ochre-yellow.

Staudinger's *D. anceps* is said to be smaller, the secondaries white, like the primaries, but with a yellowish suffusion at the anal angle; the female more opaque than in *D. panamensis*, not ochre-yellow on the secondaries; therefore this female would answer to the female of "*D. panamensis*" figured in the 'Biologia.'

Staudinger's *D. chagris* is said to resemble his *D. panamensis* in both sexes, excepting that it has a somewhat broader black apical border and the under surface of the primaries is white with yellow costal border.

Staudinger's *D. chiricana* is a "self," the male citron and the female ochre-yellow; it corresponds exactly with a pair so-named in the Hewitson collection *, which I am satisfied are conspecific with *D. florinda*; whilst Hewitson's third example is gamboge-yellow, and therefore is intermediate between *D. anceps* ♀ and *D. chiricana* ♀.

As another instance of variation in ground-colour in this genus I may mention that I have no doubt of *P. pedrosina* being a mere form of *P. palæstra*, differing in having the secondaries and costa of primaries on the under surface white instead of yellow; there is no other difference by which to separate them.

My *D. pedrosina*, therefore, will sink as a seasonal form or a sport of *D. palæstra*, Hopffer.

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* Staudinger's "ochre-yellow" I should call bright orange.

July 1896.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, vol. xviii., *July* 1896.

On a small Collection of Lepidoptera sent from Nyasa in 1895 by Mr. R. Crawshay. By ARTHUR G. BUTLER, Ph.D. &c.

ALTHOUGH the present consignment includes only one new species, it is exceptionally interesting, not only as comprising several links between described species, but on account of the important additional evidence afforded by the careful dating of the captures; so that now it is possible, by comparing these with Mr. Crawshay's previous consignments, to prove conclusively that several very distinct forms declared to be seasonal and conspecific occur together repeatedly in various months of the year—that, in fact, they are not confined to any particular season, and have no more evident claim to be called forms of one species than our European *Vanessa c-album* or *V. polychloros* have to be called forms of *V. urticæ*.

1. *Melanitis leda,* var. *solandra.*

Papilio solandra, Fabricius, Syst. Ent. p. 500 (1775).

Deep Bay, W. coast of Lake Nyasa, Feb. 14th, 1895.

"Dusky brown Thicket, eyed upper wing. Delicate, almost impossible to kill a perfect specimen" (*R. C.*).

Said to be unquestionably the wet-season form of the following. It would appear that the climate of Nyasa must be as variable and uncertain as that of England !

1 *a.* Var. *fulvescens.*

Cyllo leda, var. *fulvescens*, Guenée in Maillard's 'Réunion,' ii., Lép. p. 15 (1863).

Lipembi, W. coast of Lake Nyasa, Feb. 22nd, 1895.

"Dusky brown Thicket. A curious insect of owlish habits, frequenting the gloom of thick covert, and not taking wing in the daytime unless disturbed; flies at dusk" (*R. C.*).

2. *Charaxes flavifasciatus.*

Charaxes castor, var. *flavifasciatus*, Butler, P. Z. S. 1895, p. 251.

Upper Leya, 6 miles N.W. of Deep Bay, W. coast of Lake Nyasa, March 3rd, 1895.

"Dark brown, blue and gold Admiral. Taken feasting on fresh leopard's excrement about half a mile beyond where I captured the large Azure" (*R. C.*).

3. *Charaxes saturnus.*

Charaxes saturnus, Butler, P. Z. S. 1865, p. 624, pl. xxxvi. fig. 1.

♂, Deep Bay, Feb. 13th, 1895.

"Large light brown barred Admiral with two tails. Taken feasting on freshly killed lion-skin" (*R. C.*).

4. *Charaxes guderiana.*

♂. *Nymphalis guderiana*, Dewitz, Nova Acta Akad. Naturf. Halle, 1879, p. 200, pl. ii. fig. 18.

♀. *Charaxes guderiana*, Butler, P. Z. S. 1893, p. 648; Trimen, P. Z. S. 1894, pl. v. fig. 8.

Henga, W. of Lake Nyasa: ♂, Jan. 28th; ♀, Feb. 1st, 1895.

Mr. Crawshay calls the male the "Indigo Admiral," and the female, which contained "25 large and light green fully developed eggs," he describes as "Large light-brown-barred Admiral with four tails."

5. *Charaxes ethalion* (Eastern type).

♀. *Charaxes ethalion*, Boisduval, Voy. de Deleg. ii. p. 593 (1847).

♂, Upper Leya, 6 miles N.W. of Deep Bay, March 3rd, 1895. Mrali, 25 miles N of Deep Bay, Feb. 22nd, 1895.

"Dark green Admiral with two tails: a foul feeder" (*R. C.*).

Mr. Crawshay incorrectly calls this a female; it is unquestionably a male.

6. *Charaxes Bohemani.*

Charaxes Bohemani, Felder, Wien. ent. Monatschr. iii. p. 321, pl. vi. fig. 3 (1859).

♂, Upper Leya, 6 miles N.W. of Deep Bay, March 3rd, 1895.

"Giant Azure Blue (Admiral?). Very rarely met with, and almost impossible to take unless when indulging its foul appetite for putrid flesh or excrement. This specimen I took feeding on leopard's excrement at the side of the path in open forest" (*R. C.*).

7. *Charaxes varanes.*

Papilio varanes, Cramer, Pap. Exot. ii. pl. clx. figs. D, E (1779).

♀, Mrali, W. coast of Lake Nyasa, March 2nd, 1895.

"Burnt-umber and pearl" (*R. C.*).

8. *Panopea heliogenes*, sp. n.

The largest species of the *P. lucretia* group hitherto received: in form nearest to *P. protracta*, in pattern nearer to *P. expansa*, but the arched belt across the centre of the primaries narrower, more nearly approaching that of *P. comorana*; this and the subapical macular band pale buff, but the submarginal spots on all the wings nearly pure white; the patch at centre of inner margin of primaries and the whole central area of secondaries buff, washed with deep ochreous; the veins crossing the ochreous area partly white and partly black: body black, boldly spotted with snow-white; under surface very similar to *P. protracta*, but altogether yellower.

Expanse of wings 90 millim.

♀, Deep Bay, west coast of Lake Nyasa, Feb. 7th, 1895.

Mr. Crawshay calls this the "yellowish-brown underwinged Fritillary."

9. *Euralia Wahlbergi.*

Diadema Wahlbergi, Wallengren, Kongl. Sv. Vet.-Akad. Handl., Lep. Rhop. Caffr. p. 27 (1857).

♂, Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th, 1895.

"Black and white Emperor" (*R. C.*).

9 *a.* Var. *Papilio dubius.*

Papilio dubius, Beauv. Ins. Afr. Am. p. 238, pl. vi. figs. 2 *a, b* (1805).

♀, Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th, 1895.

"Black, white, and yellowish-brown Emperor" (*R. C.*).

9 *b.* ♀ var. = *E. Drucei*, but larger and with white central area to hind wings.

Ngerenge, Feb. 27th, 1895.

9 *c.* ♂ var. = *E. mima*, but smaller, and with partly white central area to hind wings, as in *E. Drucei.*

Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th, 1895.

The four forms of *Euralia* here enumerated represent the most interesting series hitherto received from Nyasa. Mr. G. A. K. Marshall tells me that *E. mima* and *E. Wahlbergi* have not only been taken *in copulâ* in S. Africa, but have both been bred from a series of similar larvæ taken from the same tree; yet not only are they wonderfully dissimilar in pattern and colouring, but whereas *E. Wahlbergi* is represented by a Western form very like itself, *E. mima* does not occur on the west coast. On the other hand, *E. dubius* is a common Western type which varies considerably, but does not occur in South Africa, whilst in Nyasa the whole of the Western and Southern forms (with the exception of the Western representative of *E. Wahlbergi*) occur together. The whole question of the distinctness of species in this, as in many other groups, becomes very complicated, more especially when it is evident that the distinctions are not seasonal.

10. *Hypolimnas misippus.*

Papilio misippus, Linnæus, Mus. Lud. Ulr. p. 264 (1764).

♂, Deep Bay, W. of Lake Nyasa, Jan. 1st, 1895; 2 ♀, Mtambwi, foot of Nyika Plateau, Feb. 4th.

The male is labelled "Purple Emperor," the females "Black-veined and white and black Brown" and "Black-veined Brown," the latter being the *H. inaria* variety, resembling *Limnas Klugii.*

11. *Junonia pelasgis.*

Vanessa pelasgis, Godart, Enc. Méth. ix., Suppl. p. 820 (1823).
Var. *Junonia chapunga*, Hewitson, Exot. Butt. iii., *Jun.* pl. i. figs. 2, 3 (1864).

♂, Kwereru Hill, Deep Bay, April 22nd, 1895; ♀, foot of Jakwa Mountain, Nkamanga, Jan. 28th, 1895.

"Dusky Tortoiseshell. Impossible almost to take a perfect specimen" (*R. C.*).

The specimens now sent completely link *J. chapunga* to *J. pelasgis.*

12. *Junonia cuama.*

Junonia cuama, Hewitson, Exot. Butt. iii., *Jun.* pl. i. figs. 4, 5 (1864).

Kondowi, Lower Nyika, April 6th, 1895.

I have recently been assured that this is an extreme dry-season form of *J. simia*, Wllgr., and that my *J. Trimeni* is a form produced between the wet and dry seasons. Before this can be accepted it will have to be proved by breeding, for the evidence offered by dated specimens distinctly contradicts the assertion. I am beginning to have very serious doubts as to the reliability of the evidence upon which many of the so-called "seasonal forms" are associated. In the Museum series we now have twelve examples of *J. cuama*, half of which are labelled with the dates of capture—January, April, September, and December. Of *J. Trimeni* we have nine, all dated, as follows:—January, February, July, December. Of *J. simia* we have fifteen, of which five are dated—January, April, July, and December. Therefore it is absolutely certain that the supposed extreme dry- and wet-season forms occur in perfect condition simultaneously in January, April, and December, and that the intermediate and wet-season forms occur together in January, July, and December. Whenever we have received carefully dated collections from scrupulously accurate collectors I have invariably found that they tended to disprove most conclusively the assertions incessantly made as to seasonal di- or polymorphism. In hardly any instances are these assertions supported by careful experiments in breeding; but, so far as I have been able to judge, they appear to have been based solely upon the dates at which certain forms happen to have occurred in quantity. We will, for the sake of example, assume that *Vanessa urticæ* occurred in quantities in June and *V. polychloros* took its place in October (I do not pretend that they do so): the exponent of seasonal dimorphism would immediately declare that *V. urticæ* was the dry-season form of *V. poly-*

chloros. I firmly believe that many of the forms now being associated under the term seasonal, when bred, will prove to be infinitely more distinct than our *Vanessa urticæ* and *V. polychloros.*

13. *Junonia Trimeni.*

Junonia Trimeni, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 4.

♂, Kambwiyi, Lower Nyika, Jan. 21st; Mtambwi, foot of Nyika plateau, Feb. 4th, 1895.

" Salmon-coloured Tortoiseshell " (*R. C.*).

14. *Junonia aurorina.*

Junonia aurorina, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 3.

Kambwiyi, Lower Nyika, Feb. 2nd, 1895.

It is quite possible that this may be an early season form of *J. tugela,* a specimen of which Mr. Crawshay obtained on the Nyika Plateau in September 1893; this would not require a great stretch of imagination, because the chief distinctions between the two forms consist in the outline of the anterior wings. Nevertheless, without stronger evidence they must for the present be considered distinct.

15. *Junonia artaxia.*

Junonia artaxia, Hewitson, Exot. Butt. iii., *Jun.* pl. i. fig. 6 (1864).

♂, Ndara, W. coast of Lake Nyasa, March 2nd; ♀, Chifumya, Lower Nyika, April 20th, 1895.

J. Nachtigalii is said to be undoubtedly the wet-season form of this species. In the Museum we have *J. artaxia* collected in Nyasaland in January, March, April, July, and December, but *J. Nachtigalii* only in July. I do not know how these dates will bear out the assertion, but it is certain that fine examples of both types are obtainable in July.

16. *Protogoniomorpha aglatonice.*

Vanessa aglatonice, Godart, Enc. Méth. ix. p. 299 (1819); Lucas, Lep. Exot. pl. lvii. fig. 2 (1835).

♂, Ngerenge Plains, W. coast of Lake Nyasa, Feb. 24th; Deep Bay, March 14th, 1895.

" Pearl-grey. A rare insect in these parts and very hard to take. Enclosed specimen (the Deep Bay example) taken feeding on cattle manure " (*R. C.*).

17. *Pyrameis cardui.*

Papilio cardui, Linnæus, Faun. Suec. p. 276 (1761).

Deep Bay, Feb. 4th, 1895.

"Painted Lady" (*R. C.*).

18. *Metacrenis Crawshayi.*

Crenis Crawshayi, Butler, P. Z. S. 1893, p. 654, pl. lx. fig. 5.

♂, Karora, 9 miles N.W. of Deep Bay, March 3rd, 1895.

"Plum-coloured Fritillary. Rare and difficult to catch, as it perches high; taken in open forest" (*R. C.*).

19. *Euphœdra neophron.*

Romaleosoma neophron, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 640; Peters's Reise n. Mossamb. Zool. v. p. 386, pl. xxii. figs. 1, 2 (1862).

♂, Kaporo, Songwi River plains, Feb. 25th; Upper Leya, 6 miles N.W. of Deep Bay, March 3rd, 1895.

"Light blue, gold and black Admiral. A lover of dark cool shades" (*R. C.*).

Both specimens a good deal worn; they belong to the greenish variety figured by Hopffer.

20. *Eurytela dryope.*

Papilio dryope, Cramer, Pap. Exot. i. pl. lxxviii. figs. E, F (1779).

Mtambwi, foot of Nyika plateau, Feb. 4th, 1895.

"Orange-belted Tortoiseshell" (*R. C.*).

21. *Byblia vulgaris.*

Hypanis ilithyia, var. *vulgaris*, Staudinger, Exot. Schmett. p. 106 (1884–88).

Mrali, 25 miles N. of Deep Bay, Feb. 22nd, 1895.

This species occurs in January, February, June, November, and December, according to the collector's dates on our specimens. It is supposed to be a varietal form of *B. ilithyia* in Africa. Our African examples of the latter were obtained in January, November, and December, but most of them are not dated. From Arabia we have one labelled June; from India, however, they are dated April, May, and October. I believe *B. acheloia* is supposed to be the extreme development of the dry-season form in South Africa. The puzzle to me is, Why should a species common to India and Africa produce totally different varietal forms in the two countries? As *B. vulgaris* only occurs in Africa, it can therefore only be supposed that in India the species produces two dry-season forms—*B. ilithyia* and *B. simplex*[*]. But the question most difficult of explanation, as it seems to me, is—How can two forms be called seasonal when they occur at the same season?

22. *Acræa caldarena.*

Acræa caldarena, Hewitson, Ent. Month. Mag. xiv. p. 52 (1877).

♀, Henga, W. of Lake Nyasa, Feb. 1st, 1895.
"Black-tipped dusky Fritillary" (*R. C.*).

23. *Acræa egina.*

Papilio egina, Cramer, Pap. Exot. i. pl. xxxix. figs. F, G (1776).

Lumpi River, Lower Nyika, Feb. 2nd, 1895.
"Large rose and black Fritillary" (*R. C.*).

24. *Catopsilia florella.*

♀. *Papilio florella*, Fabricius, Syst. Ent. p. 479 (1775).

♂ ♀, taken *in coitû*, Mrali, March 2nd; ♀, Henga, Jan. 22nd, 1895.

"Yellow Brimstone" (*R. C.*).

Mr. Crawshay evidently supposed the bright-coloured sex to be the male, and labelled accordingly; in this, of course, he was mistaken.

Var. *Colias pyrene.*

Colias pyrene, Swainson, Zool. Ill. i. pl. li. (1820).

♂ ♀, taken *in coitû*, Mrali, March 2nd (the female contained a "large number of white pointed eggs").

"Green Brimstone" (*R. C.*).

25. *Teracolus anax.*

Callosune anax, H. Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 125 (1889); Rhop. Exot. i., *Call.* pl. i. figs. 5–8 (1889).

♀, Henga, 3200 feet, west of Lake Nyasa, Jan. 22nd, 1895.

"Violet-tipped White ♀" (*R. C.*).

T. anax is said to be a wet-season form of *T. regina*. I very much doubt the existence of *T. regina* in many of the localities frequented by *T. anax*; the latter flies in January,

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[*] Most of our examples of the latter, if not all, were captured in February. I am told, however, that the seasonal forms in India are less marked than in Africa.

February, and October in Central Africa, according to our dated specimens. *T. regina* does, however, occur in the dry season.

26. *Papilio demoleus.*

Papilio demoleus, Linnæus, Mus. Lud. Ulr. p. 214 (1764).

♂, Henga, W. of Lake Nyasa, Jan. 26th, 1895.
"Large yellow and black velvet Swallow-tail" (*R. C.*).

27. *Papilio leonidas.*

Papilio leonidas, Fabricius, Ent. Syst. iii. 1, p. 35 (1793).

♀, Foot of Jakwa Mountain, Henga to Nkamanga, Jan. 23rd, 1895.
"Turquoise and Black" (*R. C.*).

28. *Papilio pseudonireus.*

Papilio pseudonireus, Felder, Reise der Nov. Lep. i. p. 94 (1865).

2 ♂, Kantorongondo Mountain, 5900 and 6975 feet, Nyika, April 15th and 16th; ♀, Cheni-Cheni Mountain, 6100 feet, Nyika, April 17th, 1895.
"Blue and black Swallow-tail" (*R. C.*).

Aug. 1896

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xviii., *August* 1896.

Descriptions of some new Lepidoptera from Nyasaland.

By ARTHUR G. BUTLER, Ph.D., F.L.S., &c.

AMONGST the new species in three series of Lepidoptera recently collected for the Museum by Mr. R. Crawshay the following interesting forms may be at once described:—

Planema scalivittata, sp. n.

♂. Nearest to *P. aganice*, having the same form and general coloration, but with entirely different banding, the curious almost sigmoidal band and spot on the primaries being replaced by a short quinquefid dull white transverse bar from the costal to the median vein beyond the cell, and a notched or subangulated transverse dull white bar, obliquely below which is a small spot nearer to the outer margin, the two spots being separated by the second median branch; the band of the secondaries is narrower and tapers much more towards the costa than in *P. aganice*, and on the underside it is creamy white, with a sharply defined straight inner edge and a nearly parallel (barely angulated) outer edge, broken by the usual internervular streaks.

Expanse of wings 71 millim.

Kasungu Mountain, 7425 feet alt., Nyika, March 1st, 1896.

The markings of the primaries in this species form an almost rectangular zigzag, which runs obliquely from just beyond the middle of the costal to just below the middle of the outer margin.

Alœna reticulata, sp. n.

♂. Above greyish black; primaries with the costal margin to the middle narrowly ochreous; three spots in the cell, the first two squamose, the basal one elongated, cuneiform, the others subquadrate; a squamose whitish patch below median vein from base to near the middle of the wing; an angular white macular bar, consisting of seven spots, from the costa to the first median branch beyond the cell; traces of discal and submarginal series of small spots, the first five spots and the last of the discal series and the second and three last of the submarginal series being white, and therefore fairly well defined; fringe white, flecked with black: secondaries with ashy hairs over the basal half; a white macular angulated band, consisting of eight spots, beyond the middle, the third and fourth spots large, elongated, and confluent, the dividing vein being white instead of black, the last spot with a grey continuation up the abdominal border; a submarginal series of six squamose white spots: body black, margins of eyes snow-white; collar ferruginous; terminal segments of abdomen banded with ochreous; anus ochreous. Under surface somewhat like that of *A. nyassæ*, but mostly cream-coloured and black, the reticulations being much more complete; the primaries with narrower postmedian band and continuous black submarginal line; the secondaries with no complete open central space, the black bars being all connected; palpi, tibiæ, tarsi, and ventral surface of abdomen orange-tawny.

Expanse of wings 36 millim.

♀. Larger and much whiter on both surfaces; the secondaries above white, reticulated with greyish and stained on the external area with creamy; below, the submarginal black line is wanting on the primaries and ill-defined on the secondaries.

Expanse of wings 40 millim.

♂, Kasungu Mountain, 5400 feet alt., Nyika, March 5th, 1896; ♀, Mtambwi Hill, Deep Bay, Jan. 6th, 1896.

Cyclopides perexcellens, sp. n.

Allied to *C. metis*, *quadrisignatus*, &c.; above shining bronze-brown, with greenish reflections; primaries with eight spots of bright golden ochreous, as in the most heavily-marked specimens of *C. quadrisignatus*, and a submarginal series of six dots from costa to first median interspace: secondaries with five or six unequal submarginal squamose greenish-ochreous spots and two short streaks beyond the cell; fringe (of these wings only) golden ochreous: body blackish; head and palpi clothed with golden-brown hair, pterygodes with tawny cupreous hair. Primaries below with the costal margin and a decreasing submarginal series of spots creamy whitish varied with buff; fringe with a broad ochreous central band, otherwise marked as above: secondaries ochreous varied with greenish cream; abdominal area deep brown, with longitudinal interrupted bluish-ash streak; veins and margins black; fringe orange or golden ochreous, as above; a triangular spot at base of subcostal area, a band of five irregularly placed unequal spots crossing the cell obliquely, a discal oblique series of five spots, and a marginal series of seven spots metallic silver: palpi below ochreous; pectus brown, clothed with ochreous hairs; venter with central cream-coloured stripe, bordered with ochreous.

Expanse of wings 33 millim.

Two males, Kasungu Mountain, 7425 feet alt., Nyika, March 5th, 1896.

By far the most beautiful species hitherto described, and utterly unlike any other species in the elegant silver spotting of the under surface.

A pair of a very beautiful Limacodid obtained by Mr. Crawshay I was at first inclined to regard as a variety of *Tæda œtitis*, Wllgr.; a careful comparison of the two has, however, convinced me that they are quite distinct species:—

Tæda prasina, sp. n.

Primaries pea-green, bluish at outer margin; markings silver, edged with golden rust-red: secondaries silky ochreous; antennæ reddish testaceous; thorax sage-green; abdomen deep golden ochraceous. Differs from *Tæda œtitis* in the yellower tint of the primaries and the great extension of the silver markings, the basal patch consisting of six or seven divisions separated by rust-red reticulation; the spot beyond the cell four times larger, its outer half divided by golden rust reticulation into two spots; the short transverse bar towards external angle continued by a series of decreasing spots almost to apex, and somewhat resembling a reversed cornucopia with eight divisions; secondaries uniformly ochreous, the grey suffusion of *T. œtitis* being absent.

Expanse of wings 33–34 millim.

Two males, Luvira River, Nyasa to Tanganyika plateau, December 14th, 1895.

Hibrildes Crawshayi, sp. n.

♀. Allied to *H. norax* of Druce (*Anengya spiritalis* of Karsch *), but much smaller; semitransparent rosy tawny, with slender black veins: primaries with a short black bar across the end of the cell; external border dark grey, dentate-sinuate internally, broad at apex, narrow at external angle; fringe grey, becoming whitish tawny towards external angle: secondaries with a black discocellular dash; external border rather broadly blackish, enclosing six spots of the ground-colour; fringe of outer border grey: head ochreous, antennæ black; thorax blackish, spotted with white and buff; abdomen tawny at base, otherwise blackish, with dorsal and lateral spots grading from buff to cream-colour; anal tuft ochreous. Wings below more glossy than above, but similar; face ochreous; pectus deep brown; legs with a few ochreous hairs; venter brown, bounded by an ochreous stripe and a row of cream-coloured spots.

Expanse of wings 61 millim.

Mwini-uruma's town, Nyika to Tanganyika plateau, December 17th, 1895.

HÆMATORITHRA, gen. nov.

Near to *Omiza*, Walk.; differs in its much broader antennæ, in the straight discocellulars of the primaries, and the smaller secondaries, with the subcostal branches emitted together from the same point.

Type *H. rubrifasciata*.

Hœmatorithra rubrifasciata, sp. n.

Primaries sordid sericeous creamy white, with stramineous costa and outer-marginal fringe; a purplish-black transverse dash from costa at basal two sevenths, continued across the wing as a dull blood-red stripe; a similar (but imperfect) oblique subapical purplish-black dash, followed almost immediately by an oblique inwardly directed arched stripe of red, which runs to inner margin; a black discocellular dash: secondaries straw-yellow, with a black spot on upper discocellular veinlet and a red dash near anal angle: face ochreous; vertex of head and broadly pectinated antennæ black; collar and front of pterygodes stramineous; remainder of pterygodes and thorax sericeous sordid creamy white; abdomen greyer, yellowish at sides. Under surface of all the wings ochreous; primaries with no inner band and the outer band reduced to an oblique dash; black discocellular dash as above: secondaries with a red spot beyond the cell; otherwise as above: body below cream-coloured, the legs partly stramineous; palpi ochreous.

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* Described in a paper on African Lepidoptera, containing many new names for old species (Ent. Nachr. 1895, p. 374, pl. iv. fig. 7).

Expanse of wings 33 millim.

♂, Kasitu River, foot of Jakwa Mountain, Henga, west Lake Nyasa, June 16th, 1895.

Nov 1896

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, November 17, 1896.]

On two Collections of Lepidoptera made by Mr. R. Crawshay in Nyasa-land. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

(Plates XLI. & XLII.)

A few days before his return to England a small collection of Lepidoptera reached me from Mr. Crawshay, accompanied by a letter, in which he stated that it was from quite a new locality, "viz. from Senga, the Loangwa River valley—which, as you can see, drains into the Upper Zambesi River, and not into this lake.

"So far as I know, only two Europeans have ever visited Senga besides myself, one of whom was poor Mr. Glave, who died lately when crossing the continent from east to west. No one, I think, has ever done any natural history collecting there.

"In August and September last I had occasion to make a journey into Senga, for the purpose of investigating the slave-trade, and this afforded me an opportunity of shooting and natural history collecting.

"I got together a number of Antelopes' heads, some land-shells, and about sixty species of Butterflies—some of which I take to be new, for I have never before seen anything like them. Had the state of the country permitted it, I would have prolonged my journey and done more; but the Senga slave-traders proved hostile: twice we were fired on; and, having no fighting force at my disposal, I was obliged to retrace my steps.

"However, everything taken into consideration, I am well pleased with what little I got; the Butterflies certainly are very interesting, and will furnish, I should think, six or seven new species, if not more.

"Returning from Senga, then, I revisited Henga (3½ days S.W. from this), and there I spent about six weeks for the purpose of shooting. It was not a good time of year for insects, being just the end of the dry season: however, I took a few, one a large spotted 'Blue'—the largest 'Blue' I think I ever saw, but not anything gorgeous, which may be something good. This and one or two other insects I will send you, all in the same box."

We had commenced mounting the Butterflies in this very interesting consignment when Mr. Crawshay reached England, bringing with him two other boxes of Lepidoptera collected by him in or near the Deep Bay district. I have therefore thought it best to combine the account of the two collections in one paper.

As, of late years, the minds of Lepidopterists have been greatly exercised respecting the seasonal forms of Butterflies, I asked Mr. Crawshay whether he could give me information respecting the duration of the wet and dry seasons in British Central Africa. He now sends me the following particulars, which will doubtless prove of considerable value to the students of dimorphism:—

"No precise limit can be laid down to define the rainy and dry seasons throughout the whole of British Central Africa. The seasons vary in the various localities: in the first place, latitude has to be taken into consideration; then, again, the rains of the hills set in earlier than those of the plains.

"In the *Shiri highlands*, which on the mean are over 3000 feet alt., the first rains fall about the end of September or the beginning of October, according to the phase of the moon; these are the preliminary rains, and they last only two or three days, as a rule. Then succeeds a dry period of some three weeks or so. After this the heavy rains set in, and continue until the middle or end of April—some years a little earlier or later than this.

"This year I happened to be at Blantyre at the end of April and the beginning of May: it rained then almost every day, up to the date of my departure on or about May 12th.

"On the *Lower Shiri plains* the wet season does not set in until later: no rain falls at Chiromo, I think, before the middle of November. The last day or two of October, 1894, when travelling by land from Chiromo to Blantyre, I came in for light rains on reaching the foot of the hills at the back of the Elephant marsh.

"Further north, on *Lake Nyasa*, the rains commence later by about a month or six weeks, on the mean: much, however, depends on locality—whether the country is plain or hilly, and, again, bare or forested.

"Take for instance *Deep Bay*, about 10° 30′ S. lat., and roughly some ninety miles from the north end of the lake. Here there are low hills attaining a height of some 400 feet above the lake, and behind these again is low undulating country extending some twelve or fifteen miles inland, to the foot of the Nyika plateau, which attains on the mean a height of 7400 feet, the accepted altitude of Lake Nyasa being some 1600 odd feet.

"No rain falls at Deep Bay before the middle of November, sometimes not until later. In 1893 there was no rain before December, when there were two or three preliminary showers. The heavy rains did not set in until January 8, 1894. In 1895 there were some very heavy preliminary rains in November; the heavy rains set in, in good earnest, with the waning moon in December of that year.

"The rains continue until about the middle of May, sometimes a week or two later; the heavy rains slack off at the end of March. The heaviest rains of the year are between February and March; after that it rains fitfully, at intervals of every two or three days.

"In 1889 it rained all May, very heavily too during the first half of the month. In 1893 there were two very heavy downpours on the 17th and 18th July, fully five or six weeks after the dry season had set in.

"In *Nyika* the rains commence a good deal earlier and last longer. It is a very moist country indeed; the higher parts of it can hardly be said to have any dry season, as there are rainy mists all the year through. The first *rains* fall about the end of September or the beginning of October. The rainfall of these mountains rather resembles that of Northern Europe, Ireland especially: it rains thickly but lightly, and for days on end at times; there are not the heavy downpours which are experienced at lower altitudes.

"A hundred miles or so south of Deep Bay, at *Bandawe*, the rains set in earlier than at Deep Bay; this may be attributed to the fact that Bandawe is a hilly promontory, abutting from high mountainous country, some of the rainfall of which finds its way down to the lake along the neck of connecting highland. If I recollect rightly, I experienced a shower or two of rain when camped at Bandawe about the last day of October, 1885. Bandawe, I might here mention, is a terrible spot for thunderstorms.

"In *Henga*, the valley of the Upper Lunyina River, 3300 feet alt., on the mean, some fifty miles S.W. of Deep Bay, the early rains fall about the beginning of November and the rainy season ends about the beginning of May, though there may be, and very often are, a good few showers after that.

"On the *Konde plains*, which commence about thirty miles north of Deep Bay and extend to the lofty Wakinga Mountains in German territory, the rains are a week or two later than at Deep Bay. At *Karonga*, the terminus of the so-called Nyasa-Tanganyika "road" (no road in reality exists—it is only a native track), the first rains do not fall before the beginning of December, as a rule. The dry season there commences at the beginning of May, or possibly a little earlier, according to the phase of the moon.

"The Nyasa-Tanganyika plateau:—rains commence in November, about the beginning of the month on the escarpments of the plateau, and about a fortnight later halfway across, and last until the end of April. The rainfall is very heavy, especially at the extremities of the plateau: nevertheless, towards the end of the dry season, much of it is a desert almost, for want of water.

"In the Loangwa River valley, Senga, some seven or eight days' journeying on foot S.W. of Karonga, the preliminary rains commence in September; and, I believe, the rainy season lasts till May, though I was not there to see this for myself. In August, 1895, I found the Loangwa valley completely burnt up; on September 10th we had rain, also on one or two days subsequently.

"In the Eastern watershed of the Congo, *i. e.* on Lake Mweru, and in Kabwiri and Itawa, the preliminary rains fall in September, and the rainy season lasts on into May. During my period of residence on Lake Mweru, I found the rainy season of 1891–1892 ended May 6th on the level of the Lake; a fortnight later on the plateau to the eastward: the preliminary rains of 1892–1893 again began on September 4th, some three weeks earlier than was the case in 1891."

All Mr. Crawshay's captures having been carefully dated, it will now be possible for any Lepidopterists, by going through my published papers, to discover whether a form was obtained in the dry or wet season; in any case it is certain that some of the supposed distinctly *seasonal* forms were all captured at the same spot on the same day, and (to judge by their excellent condition) must have emerged from the pupa about the same time; but I am told that this fact does not militate against the view that they are dry- and wet-season forms! Personally, I fail to understand how an insect which flies abundantly in the middle of the rainy season can be called a "dry-season form"; I can only suppose that the expression "dry season" is not to be understood literally, but merely as indicating a type of form and colouring prevalent during the dry season, though often occurring during the rains.

The following is a list of the species in the two series last collected by Mr. Crawshay, among which are twenty new to science, some being of considerable interest.

1. AMAURIS ANSORGEI.

Amauris ansorgei, E. M. Sharpe.

Kasungu Mountain, 7200 feet alt., Nyika, March 3rd, 1896.

2. AMAURIS CRAWSHAYI, sp. n. (Plate XLI. fig. 1.)

Intermediate between *A. albimaculata* and *A. whytei*: the primaries having the form and pattern of the former, but the ground-colour is much deeper, glossed with indigo; the pattern of the secondaries corresponds with that of *A. whytei*, excepting that the submarginal spots are better defined and pearl-white and the broad belt paler and more creamy. Expanse of wings 80 millim.

♂ ♂, Kapora, Songwe plain, 2nd March, 1895; Nkata Bay, W. coast of Lake Nyasa, 14th March, 1896.

3. LIMNAS CHRYSIPPUS.

Papilio chrysippus, Linnæus, Mus. Lud. Ulr. p. 263 (1764).

♂, Kasungu Mountain, 7425 feet alt., Nyika, March 4th, 1896.

4. GNOPHODES DIVERSA.

Gnophodes diversa, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. v. p. 333 (1880).

♀, Mkamasi River, Nyasa to Tanganyika Road, August 22nd, 1895.

"White ova" (*R. C.*).

5. MELANITIS SOLANDRA.

Papilio solandra, Fabricius, Syst. Ent. p. 500 (1775).

♀, Leya, Deep Bay, W. coast of Lake Nyasa, June 4th, 1895
Var. *fulvescens*. Nkata Bay, March 14th, 1896.
"Emerald-green ova" (*R. C.*).

6. APHYSONEURIA PIGMENTARIA.

Aphysoneuria pigmentaria, Karsch, Ent. Nachr. xx. p. 191 (1894).

♀, Kasungu Mountain, 7425 feet alt., March 3rd, 1896.
"Pearly-white coloured ova" (*R. C.*).

7. PHYSCÆNURA PIONE.

♀. *Physcænura pione*, Godman, P. Z. S. 1880, p. 183, pl. xix. figs. 2, 3; ♂. Trimen, l. c. 1894, p. 20, pl. iv. fig. 1.

Fuleriva forest, Deep Bay, March 6th, 1896.

Seven examples were obtained; but, as we already possess a sufficient series of this pretty species, none were retained for the Museum collection.

8. SAMANTA SIMONSI.

Mycalesis simonsii, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xix. p. 458 (1877).

♂ ♂, Karonga plain, 1670 feet alt., N.W. coast of Lake Nyasa, August 20th; ♀, Virauli Mountain, Nyasa to Tanganyika Road, August 22nd, 1895.

Said to be, without question, the dry-season form of *S. perspicua*: this is quite possible, inasmuch as all the specimens now sent were obtained at the height of the dry season. The difference between the two forms is one of colour rather than of pattern or outline; also, as might be expected, the ocelli are reduced in size. The chief objection is that the nearly related *S. eliasis* is a native of a humid country, and has no wet-season form corresponding with *S. perspicua*.

9. CHARAXES SATURNUS, var. LATICINCTUS.

Charaxes saturnus, var. *laticinctus*, Butler, P. Z. S. 1895, p. 252.

♂, Vuwa, W. coast of Lake Nyasa, August 16th, 1895.

10. CHARAXES DRUCEANUS.

Charaxes druceanus, Butler, Cist. Ent. i. p. 4 (1869); Lep. Exot. p. 26, pl. x. fig. 4.

♂, Lumpi River, Lower Nyika, Nov. 30th, 1895.

"Taken on a putrefying Eland's head, while on a porter's head" (*R. C.*).

11. CHARAXES ACHÆMENES.

Charaxes achæmenes, Felder, Reise der Nov., Lep. iii. p. 446, pl. lix. figs. 6, 7 (1867).

♂, Deep Bay, March 6th, 1896.

12. CHARAXES GUDERIANA.

♂. *Nymphalis guderiana*, Dewitz, Nova Acta Akad. Naturf. Halle, 1879, p. 200, pl. 2. fig. 18.

♀. *Charaxes guderiana*, Butler, P. Z. S. 1893, p. 648; Trimen, P. Z. S. 1894, pl. v. fig. 8.

♀, Deep Bay, Jan. 17th, 1896.

"Taken feeding upon over-ripe bananas in my veranda;" contained a "prodigious quantity of bright emerald-green ova" (*R. C.*).

13. CHARAXES MANICA.

♀. *Charaxes manica*, Trimen, P. Z. S. 1894, p. 43, pl. vi. fig. 9.

♂, Kapora, Songwe plain, N.W. Nyasa, March 3rd, 1895 (*J. B. Yule*); ♀, Mtambwi Hill, Deep Bay, July 1st, 1895.

The female is larger than in Mr. Trimen's figure, and, on the upper surface, reminds one strongly of *C. bohemanni* ♀; it is a good deal shattered, having evidently been long on the wing. Mr. Crawshay says of it:—"A rare and almost impossible insect to take: it flies high and fast, and thus is the only specimen I have ever had a chance of taking." I now have no doubt that one of the males recorded in my paper in the 'Annals and Magazine of Natural History,' 1896, xviii. p. 68, as "*C. ethalion* (Eastern type)," and taken on the Upper Leya, on the same day as the male above noted, belongs to this species; but when identifying it I had no female for comparison.

14. Charaxes leoninus.

Charaxes leoninus, Butler, P. Z. S. 1895, p. 253, pl. xv. fig. 2.

♂, Lower Nyika, June 14th, 1895.

15. Charaxes zoolina.

Nymphalis zoolina, Westwood & Hewitson, Gen. Diurn. Lep. pl. liii. fig. 1 (1850).

♂, Mpimbi, Upper Shiri River, March 24th, 1896.

A much-shattered example, but the first we have received from Nyasa-land.

16. Panopea heliogenes. (Plate XLI. fig. 2.)

Panopea heliogenes, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 69 (1896).

♀, Mitanji, W. of Deep Bay, May 19th, 1895.

17. Hypolimnas misippus.

Papilio misippus, Linnæus, Mus. Lud. Ulr. p. 264 (1764).

♂ ♂, ♀, Deep Bay, Feb. 5th, 6th, 8th, 11th, 27th, and 29th, 1896.

18. Junonia pelasgis.

Vanessa pelasgis, Godart, Enc. Méth. ix., Suppl. p. 820 (1823).

♀, Kasungu Mountain, 7425 feet alt., Nyika, March 2nd, 1896.

"Emerald-green ova" (*R. C.*).

19. Junonia archesia.

Papilio archesia, Cramer, Pap. Exot. iii. pl. ccxix. figs. D, E (1782).

Henga, W. of Lake Nyasa, June 26th, 1895.

20. Junonia calescens.

Junonia calescens, Butler, P. Z. S. 1893, p. 652.

Mtambwi Hill, January 6th; Deep Bay, Feb. 5th, 6th, 11th, 15th, and 21st, 1896.

21. Junonia cuama.

Junonia cuama, Hewitson, Exot. Butt. iii., *Jun.* pl. 1. figs. 2, 3 (1864).

Mtambwi Hill, July 1st, 1895.

Said to be the extreme dry-season form of *J. simia*, but we have it from Zomba taken in the wet season.

22. JUNONIA TRIMENI.

Junonia trimenii, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 4.

♂, ♀, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

Said to be the form occurring between the wet and dry seasons; but, from what Mr. Crawshay says of Nyika, there ought to be no dry-season forms there. At Zomba it occurs (in company with *J. simia*) in July and (in company with both *J. simia* and *J. cuama*) in December: indeed, if we had a larger series of each of these species, I believe it would be possible to prove that they always fly simultaneously. The female of *J. trimeni* noted above has dry-season characters on the under surface.[1]

23. JUNONIA SIMIA.

Precis simia, Wallengren, Kongl. Svenska Vetensk.-Akad. Handl. 1857, p. 26.

Deep Bay, Feb. 13th and 23rd, 1896.

24. JUNONIA TUGELA.

Precis tugela, Trimen, Trans. Ent. Soc. London, 1879, p 334; South Afr. Butt. vol. i. p. 241, pl. iv. fig. 5 (1887).

♂, Mtambwi Hill, Deep Bay, July 1st, 1895.

This makes the second dated example which we have received, the first dated specimen having been obtained in September: on the other hand, *J. aurorina* (which might well be the wet-season form of *J. tugela*) appears, from our dated specimens, to fly from December to April. In South Africa Mr. Trimen records specimens of *J. tugela* as taken in March and May; whether the dry season commences so early as March on the Tugela River I do not know.

25. JUNONIA CLELIA.

Papilio clelia, Cramer, Pap. Exot. i. pl. xxi. E, F (1779).

Deep Bay, February 1st, 1896.

26. JUNONIA BOÖPIS.

Junonia boöpis, Trimen, Trans. Ent. Soc. London, 1879, p. 331.

♀, Luvira River, Nyasa to Tanganyika Road, August 23rd, 1895.

27. JUNONIA CEBRENE.

Junonia cebrene, Trimen, Trans. Ent. Soc. London, 1870, p. 353.

Deep Bay, Feb. 5th, 8th, and 15th, 1896.

28. JUNONIA NATALICA.

Precis natalica, Felder, Wien. ent. Monatschr. iv. p. 106 (1860).

♀, Deep Bay, March 10th, 1896.

"Bright green ova" (*R. C.*).

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[1] Why a pair taken on the same day should differ in the features supposed to characterize the two seasons, and in a country where it is never really dry, is a riddle which I do not pretend to solve.—A. G. B.

29. PROTOGONIOMORPHA ANACARDII.

Papilio anacardii, Linnæus, Mus. Lud. Ulr. p. 236 (1764).

Namitembo, Zomba Mountain, March 25th; Chiradzulu, Shiri Highlands, March 30th, 1896.

30. HYPANARTIA HIPPOMENE.

Hypanartia hippomene, Hübner, Samml. exot. Schmett. ii. pl. 25. figs. 3, 4 (1806).

♀, Kantorongondo Mountain, Nyika, June 30th, 1895; ♂ ♂, ♀, Kasungu Mountain, 7425 feet alt., Nyika, March 3rd, 4th, and 5th, 1896.

♀, "Having an extraordinary quantity of grass-green ova" (*R.C.*).

31. HYPANARTIA SCHŒNEIA.

Eurema schœneia, Trimen, Trans. Ent. Soc. London, 1879, p. 329; South Afr. Butt. i. p. 207, pl. iv. fig. 1 (1887).

♂ ♂, Kasungu Mountain, 7200 feet alt., Nyika, March 3rd and 4th, 1896.

My supposition (P. Z. S. 1895, p. 727) that this might prove to be the dry-season form of *H. hippomene* (since confidently asserted to be the fact, by a practical collector) is now shown to be incorrect, inasmuch as not only were both species caught on the same mountain on two successive days, but at that time of year which might perhaps be called the rainy season, were it not that there appears to be no really dry season in Nyika.

32. EUPHÆDRA NEOPHRON.

Romaleosoma neophron, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 640; Peters' Reise nach Mossamb., Zool. v. p. 386, pl. xxii. figs. 1, 2 (1862).

♂, Kapora, Songwe plain, in banana-grove, March 6th, 1895; ♀ ♀, Leya, Deep Bay, June 4th; Lupembi, W. coast of Lake Nyasa, in shady banana-grove, August 19th, 1895; ♂, ♀, Mpimbi, Upper Shiri River, March 24th and 25th, 1896.

33. EUXANTHE WAKEFIELDI.

Godartia wakefieldii, Ward, Ent. Month. Mag. x. p. 152 (1873); Afr. Lep. pl. 6. fig. 3 (1874).

Nkata Bay, W. coast of Lake Nyasa, March 14th, 1896.

34. HAMANUMIDA DÆDALUS.

Papilio dædalus, Fabricius, Syst. Ent. p. 482 (1775).

♀, Deep Bay, Feb. 17th, 1896.

35. METACRENIS CRAWSHAYI.

Crenis crawshayi, Butler, P. Z. S. 1893, p. 654, pl. lx. fig. 5.

♀, Fuleriva forest, Deep Bay, Feb. 28th, 1896.

"Full abdomen: one fully-developed ovum, pinkish-coloured" (*R. C.*).

36. METACRENIS ROSA.

Crenis rosa, Hewitson, Ent. Month. Mag. xiv. p. 82 (1877).

♂, Deep Bay, Oct. 17th, 1895.

"Rarely met with and very difficult to take: flies swiftly with gliding flight, and perches high" (*R. C.*).

37. PSEUDARGYNNIS HEGEMONE.

Argynnis hegemone, Godart, Enc. Méth. ix. p. 258 (1819).

♂, Mtambwi Hill, Deep Bay, July 1st, 1895.

38. ARGYNNIS SMARAGDIFERA.

Argynnis smaragdifera, Butler, P. Z. S. 1895, p. 629, pl. xxxv. figs. 1, 2.

♀, Cheni-Cheni Mountain, 7400 feet alt., Nyika, June 30th, 1895.

♂ ♂, ♀ ♀, Kasungu Mountain, 7425 feet alt., Sept. 2nd, 1893; March 1st to 5th, 1896.

The ova of the females are said to vary from yellow to orange in colour.

The following description of the egg of this species was made by Mr. F. W. Frohawk from a single specimen found attached to a female obtained by Consul Sharpe at Zomba:— "The ovum, of the usual *Argynnis* form, conical in shape and measuring $\frac{1}{34}$ inch high, with about twenty longitudinal keels, irregular and varying in length; some running for only two-thirds the distance from base to apex, others terminating before reaching the summit, eight only extending the entire length. It is ribbed transversely by about twenty in number, the ribs being irregularly distributed and widely separated near the summit, gradually becoming closer and shallower until finally disappearing at the base.

"In general structure this egg very closely resembles that of *A. selene* (very much more than that of either *A. euphrosyne* or *lathonia*), the number and formation of the keels and ribs being similar in both species. It differs most from *A. lathonia*, *A. euphrosyne* being intermediate between *A. smaragdifera* and *A. lathonia*."

39. NEPTIS INCONGRUA.

♀. *Neptis incongrua*, Butler, P. Z. S. 1896, p. 112, pl. vi. fig. 2.

♂ ♂, Kasungu Mountain, 6200 to 7425 feet alt., Nyika, March 1st, 3rd, and 5th, 1896.

The male sometimes differs from the female in having the ground-colour of the under surface mahogany-red.

40. NEPTIS AGATHA.

Papilio agatha, Cramer, Pap. Exot. iv. pl. cccxxvii. A, B (1782).

Deep Bay, March 6th, 1896.

41. PLANEMA SCALIVITTATA. (Plate XLI. fig. 3.)

Planema scalivittata, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 159 (1896).

Kasungu Mountain, 7425 feet alt., Nyika, March 1st, 1896.

42. ACRÆA ANACREON.

Acræa anacreon, Trimen, Trans. Ent. Soc. London, 1868, p. 77, pl. vi. figs. 3–5.

Var. *Acræa bomba*, H. G. Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 128 (1889); Rhop. Exot. i., *Acr.* pl. iii. figs. 5, 6 (1892).

Typical form, Chuona River (Mwewe's town), Unyika, Sept. 15th, 1895.

Var. *Acr. bomba.* Same locality and date.

43. ACRÆA GUILLEMEI, var. PERIPHANES.

Acræa periphanes, Oberthür, Études, livr. xvii. p. 20, pl. 2. fig. 23 (1893).

Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

A somewhat aberrant example, slightly larger than usual, in some respects intermediate between typical *A. guillemei* and *A. periphanes*, but with the spots on the border of the secondaries strongly developed.

44. ACRÆA DOUBLEDAYI, var. DIRCÆA, Butl. (*nec* Westw.).

Acræa doubledayi, Guérin, Lefebvre's Voy. en Abyss. vi. p. 378 (1847).

♂, Nyika, 4500 feet alt., west of Lake Nyasa, June 26th; ♀, Luvira River, Nyasa to Tanganyika Road, Sept. 19th, 1895.

This is the form with a black apical patch, answering to Westwood's description; but Mr. Marshall, who has examined the type, informs me that the latter does not differ from *A. caldarena.*

45. ACRÆA CALDARENA, var. NELUSCA.

Acræa caldarena, Hewitson, Ent. Month. Mag. xiv. p. 52 (1877).

Var. *Acræa nelusca*, Oberthür, Études, livr. iii. p. 25, pl. 2. figs. 2, 3 (1878).

♀, Deep Bay, Feb. 8th, 1896.

46. ACRÆA ASEMA.

Acræa asema, Hewitson, Ent. Month. Mag. xiv. p. 52 (1877); Trimen, P. Z. S. 1894, p. 24, pl. iv. figs. 3, 3*a*.

Loangwa River, Senga, Sept. 3rd, 1895.

47. ACRÆA INSIGNIS.

Acræa insignis, Distant, P. Z. S. 1880, p. 184, pl. ix. fig. 4.

Kasungu Mountain, 5945 feet alt., Nyika, Feb. 29th; and 7200 feet alt., March 5th, 1895.

48. ALÆNA RETICULATA. (Plate XLI. fig. 4.)

Alæna reticulata, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 160 (1896).

♂, Kasungu Mountain, 5400 feet alt., Nyika, March 5th, 1896; ♀, Mtambwi Hill, Deep Bay, Jan. 6th, 1896.

49. POLYOMMATUS BÆTICUS.

Papilio bœticus, Linnæus, Syst. Nat. i. 2, p. 789 (1767).

♂, Deep Bay, May 2nd, 1895; ♀, Feb. 15th, 1896; ♂, Loangwa River, Senga, Sept. 9th, Henga, 3200 feet alt., Nov. 7th, 1895.

50. CATOCHRYSOPS GLAUCA.

Lycæna glauca, Trimen, South Afr. Butt. ii. p. 21 (1887).

♂♂, ♀♀, Fuleriva forest, Deep Bay, Feb. 28th and March 6th, 1896.

51. CATOCHRYSOPS ASTERIS.

Polyommatus asteris, Godart, Enc. Méth. ix. p. 657 (1819); Trimen, South Afr. Lep. ii. pl. viii. figs. 3, 3*a* (1887).

♀, Mtambwi Hill, Deep Bay, Jan. 1st, 1896.

52. CATOCHRYSOPS PERPULCHRA.

♀. *Lycæna perpulchra*, Holland, 'Entomologist,' xxv. Suppl. p. 90 (1892); Proc. Unit. States Nat. Mus. xviii. p. 239, pl. vii. fig. 7 (1895).

♂ ♀. *Castalius hypoleucus*, Butler, P. Z. S. 1893, p. 660.

Lycæna exclusa, Trimen, P. Z. S. 1894, p. 47.

♀, Henga, W. of Lake Nyasa, Oct. 26th, 1895.

"Caught in my hat, out in the early morning. Bright emerald-green ova" (*R. C.*).

Now that a really good example has come to hand, I find that this species is undoubtedly a *Catochrysops* of the *C. asteris* group.

53. EVERES JOBATES.

Lycæna jobates, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters' Reise nach Mossamb. v. p. 408, pl. 26. figs. 9, 10 (1862).

♂♂, ♀, Kondowi, 4000 feet alt., Nyika, Feb. 21st; ♂, Kasungu Mountain, 5345 feet alt., Feb. 29th; ♀♀, 7425 feet, March 1st and 2nd; ♂, 7200 feet, Nyika, March 5th; ♀, Mitanji, W. of Deep Bay, May 19th, 1895.

♀, "Light green ova" (*R. C.*).

54. EVERES MAHALLOKOÆNA.

Lycæna mahallokœna, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 41; Trimen, Trans. Ent. Soc. London, 1870, p. 366, pl. vi. figs. 7, 8.

Lisenga, 4500 feet alt., Mbalizi valley, Unyika, Sept. 16th, 1895; Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

55. TARUCUS PLINIUS.

Hesperia plinius, Fabricius, Ent. Syst. iii. 1, p. 284 (1793).

♂, Henga, Nov. 20th, 1895; ♀, Kasungu Mountain, 6200 feet alt., Nyika, March 1st; Deep Bay, Feb. 23, 1896.

56. AZANUS SIGILLATUS.

Lampides sigillatus, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 483 (1876).

♂ ♂, Henga, W. of Lake Nyasa, Nov. 20th, 1895.
"Perches on branches of trees" (*R. C.*).

57. NACADUBA SICHELA.

Lycæna sichela, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 37.

♂ ♂, Henga, W. of Lake Nyasa, Nov. 20th, 1895.
"Very active on the wing" (*R. C.*).

In Mr. Trimen's description of this rare butterfly the upper surface is said to be "silky dark-violaceous"; but I find that the colouring is particularly liable to deepen in the damping-pan (often in patches): an example which has wholly escaped this discoloration, if one sits between it and the light, is of the same beautiful lilac as the European "Common Blue,"[1] with a narrow, tapering blackish border to the outer margin; but if held between one and the light, it changes to a sickly greenish grey, more nearly approaching the colouring of *Plebeius orbitulus*.

58. CASTALIUS CALICE.

Lycæna calice, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 642; Peters' Reise nach Mossamb. v. p. 405, pl. 26. figs. 4, 5 (1861).

Lower Nyika, June 14th, 1895.

59. LYCÆNESTHES ADHERBAL.

♀. *Lycæna adherbal*, Mabille, Bull. Soc. Zool. France, 1877, p. 217.

♂. *Lycænesthes lunulata*, Trimen, P. Z. S. 1894, p. 51, pl. vi. fig. 12.

♀, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.
"Emerald-green ova" (*R. C.*).

60. LYCÆNESTHES LIODES.

♂. *Lycænesthes liodes*, Hewitson, Trans. Ent. Soc. London, 1874, p. 349.

♀, Kondowi, Nyika, Feb. 2nd, 1896.

61. ZIZERA KNYSNA.

Lycæna knysna, Trimen, Trans. Ent. Soc. London, 3rd ser. vol. i. p. 282 (1862).

♂ ♂, Deep Bay, Feb. 24th and 26th, March 8th, 1896.
"Never plentiful; an odd one met with here and there. A very low flier, hovers within an inch or so of the ground, and has to be dredged off it almost with the net" (*R. C.*).

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[1] I believe this species now stands under the name of *Cupido icarus*.

62. ZIZERA GAIKA.

Lycæna gaika, Trimen, Trans. Ent. Soc. London, 3rd ser. vol. i. p. 403 (1862).

♂ ♂, Luvira River, Nyasa to Tanganyika Road, August 23rd, 1895.

63. ZIZERA LUCIDA.

Lycæna lucida, Trimen, Trans. Ent. Soc. London, 1883, p. 348.

♂, Virauli Hill, Nyasa to Tanganyika Road, August 22nd; ♀ ♀, Chuona River (Mwewe's town), Unyika, Sept. 15th, 1895; Deep Bay, Feb. 11th and 24th, 1896.

64. PLEBEIUS TROCHILUS.

Lycæna trochilus, Freyer, Neuere Beitr. v. pl. 440. fig. 1 (1844).

Deep Bay, Feb. 6th, 14th, and 24th, 1896.

65. SCOLITANTIDES STELLATA.

Lycæna stellata, Trimen, Trans. Ent. Soc. London, 1883, p. 349.

Kasungu Mountain, 5400 feet alt., Nyika, March 5th, 1896.

CYCLYRIUS, gen. nov.

Nearly allied to *Hyrius*, but with rounded wings; the secondaries without tails; neuration as in *Hyreus*. Type, *Polyommatus webbianus*. This genus will contain the species *P. webbianus* and *H. æquatorialis*, hitherto referred to *Hyreus*, as well as the following:—

66. CYCLYRIUS JUNO, sp. n. (Plate XLI. fig. 5.)

Allied to *C. webbianus*, the male above lilac, bluer at base, with broad cupreous-brown costal and external borders; fringes white, spotted with brown at the extremities of the nervures; secondaries with the abdominal area somewhat greyish; an oval submarginal black ocellus with shining lilac iris on first median interspace, and indications of a second smaller similar ocellus near anal angle on interno-median interspace. Body above black, clothed with silver hair; a silvery-white line on each side of the frons, immediately in front of the eyes; collar clothed with golden hair: under surface of primaries golden brown, the markings not very distinct, but consisting of two pale-edged, quadrate, slightly darker spots crossing the discoidal cell, and a belt of similar character across the disc, its uppermost division with white outer edge and followed by a creamy white diffused subapical spot; fringe creamy white, spotted with blackish: secondaries white, speckled with blackish at the base and mottled and banded with copper-brown almost exactly in the pattern of *C. æquatorialis*; a black oval spot, enclosing a metallic green dash, representing the ocellus of the upper surface. Body below densely covered with white hair or scales, the legs brownish above, white below.—Female above cupreous brown, with fringe and ocelli as in male; under surface with brown-centred white marginal spots, otherwise as in the male. Expanse of wings, ♂ 25 millim., ♀ 24 millim.

♂♂, ♀, Kasungu Mountain, 7075–7425 feet alt., Nyika, March 1st and 2nd, 1896.

67. Hyreus virgo.

Hyreus virgo, Butler, P. Z. S. 1896, p. 121, pl. vi. fig. 1.

♂, Kasungu Mountain, 5490 feet alt., Nyika, Feb. 29th, 1896.

68. Hyreus palemon.

Papilio palemon, Cramer, Pap. Exot. iv. pl. cccxc. E, F (1782).

Cheni-Cheni Mountain, 7400 feet alt., Nyika, June 30th; Mbalizi Valley, 4375 feet alt., Unyika, August 25th, 1895; Kasungu Mountain, 7425 feet alt., Nyika, March 4th, 1896.

69. Uranothauma poggei.

Plebeius poggei, Dewitz, Nov. Act. Acad. Leop.-Carol. Nat. Cur. xli. 2, pl. xxvi. fig. 7 (1879).

♂, Lisenga, 4500 feet alt., Mbalizi Valley, Unyika, Sept. 16th, 1895.

70. Uranothauma crawshayi.

Uranothauma crawshayi, Butler, P. Z. S. 1895, p. 631, pl. xxxv. figs. 6, 7.

♂ ♀, Kasungu Mountain, Sept. 2nd, 1893, March 1st, 3rd, and 5th, 1896, Nyika.

71. Capys connexiva, sp. n. (Plate XLI. fig. 6.)

Intermediate in character between *C. alpheus* and *C. disjunctus*: the male above dark cupreous brown, with bronze reflections; the cilia coloured as in *C. disjunctus*, with red basal line; the sericeous tawny area of the primaries much smaller than in the latter species, sometimes represented, as in *C. alpheus*, by a mere transverse belt, but more often diffused basally and occasionally forming a uniform triangular patch; secondaries with a discal patch not reaching the costa, but sometimes extended downwards to the anal tail, and occasionally an imperfect external border of sericeous tawny; below almost as in *C. disjunctus*. The female is very like that sex of the latter species on both surfaces, only the ground-colouring above is lavender, shading into brown on the outer border and into pale blue and greenish grey towards the base. Expanse of wings, ♂ 36–42 millim., ♀ 40 millim.

♂♂, Kasungu Mountain, 5945 feet alt., Nyika, February 29th: ♀, 5000 feet alt., March 6th, 1896.

One perfect male, four more or less worn, and a somewhat shattered female were obtained.

72. Axiocerces amanga.

Zeritis amanga, Westwood, in Oates's Matabele Land, p. 351 (1881).

♂, Mbalizi Valley, Unyika, August 25th, 1895.

73. AXIOCERCES PERION.

Papilio perion, Cramer, Pap. Exot. iv. pl. ccclxxix. B, C (1782).

♀, Luvira River, Nyasa to Tanganyika Road, August 23rd, 1895; Deep Bay, Feb. 24th, 1896.

74. CIGARITIS ABBOTTI.

Chrysophanus abbottii, Holland, 'Entomologist,' xxv. Suppl. p. 90 (1892); Proc. Unit. States Nat. Mus. vol. xviii. p. 240, pl. vii. fig. 4 (1895).

♀, Kasungu Mountain, Nyika, March 2nd, 1896.
"Emerald-green ova" (*R. C.*).

75. SPINDASIS CAFFER.

Aphnæus caffer, Trimen, Trans. Ent. Soc. London, 1868, p. 88, and 1870, p. 368.

♂ ♀, Kondowi, Lower Nyika, Feb. 21st; ♂, Kasungu Mountain, 5395 feet alt., Nyika, Feb. 29th, 1896.
"♀, Bright green ova" (*R. C.*).

76. SPINDASIS HOMEYERI.

Aphnæus homeyeri, Dewitz, Deut. ent. Zeit. xxx. p. 429, pl. 2. figs. 5 *a–c* (1886).

♀, Kambwivi, Lower Nyika, Nov. 29th, 1895.
"Large quantity of emerald-green ova" (*R. C.*).

77. LACHNOCNEMA BIBULUS.

Hesperia bibulus, Fabricius, Ent. Syst. iii. 1, p. 307 (1793).

♂, Virauli Hill, Nyasa to Tanganyika Road, August 22nd, 1895.

78. VIRACHOLA ANTA.

Lycæna anta, Trimen, Trans. Ent. Soc. London, ser. 3, vol. i. p. 402 (1862).

♀, Luvira River, Nyasa to Tanganyika Road, Sept. 19th, 1895; Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

The example from Kondowi is somewhat aberrant, of a clear lavender, bluish towards the base, and with narrower and more defined brown borders than usual; the bands on the under surface are also narrow. The Luvira River example contained "bright green ova," according to Mr. Crawshay.

79. RAPALA ZELA.

Hypolycæna zela, Hewitson, Ill. Diurn. Lep., Suppl. p. 14, pl. 5. figs. 41, 43 (1869).

♂, Kasungu Mountain, 5345 feet alt., Nyika, Feb. 29th, 1896.

80. IOLAUS AURICOSTALIS, sp. n. (Plate XLI. fig. 7.)

♀. Nearly allied to *I. philippus*, above ash-grey; primaries with the costal margin, especially at the base, bright golden-ochreous, veins dusky, external border smoky grey, preceded by an arched increasing series of six whitish spots, edged in front with smoky grey; a whitish annulus at external angle; secondaries nearly as in *I. philippus*, but with a much larger, more brightly orange spot above the outer tail; body blackish, head above and collar dusky orange: under surface chalky whitish, with white-edged dark grey markings tinged with orange towards the abdominal margin of secondaries; in general character these resemble the markings in *I. philippus*, but the discal interrupted line is more incurved on the primaries and more irregular (approaching that of *I. bowkeri* in form) on the secondaries; the orange spot above the outer tail is large and conspicuous. Expanse of wings 35 millim.

♀, Kasitu River, Angoni country, W. of Lake Nyasa, June 18th, 1895.

Unfortunately only a single example, slightly chipped towards the anal angle of both hind wings, was obtained.

81. IOLAUS CÆCULUS.

Iolaus cæculus, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters' Reise nach Mossamb. v. p. 402, pl. 25. figs. 12–14 (1862).

♂ ♂, ♀ ♀, Mtambwi Hill, Deep Bay, July 1st and Dec. 1st, 1895, Jan. 6th, Feb. 20th and 22nd, 1896.

"Fairly plentiful: a frequenter of upland forest" (*R. C.*).

The Nyasa specimens seem to vary more, as regards the width of the red bands on the under surface, than those from South Africa.

82. IOLAUS PALLENE.

Myrina pallene, Wallengren, Kongl. Svensk. Vet.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 36.

♀ ♀, Loangwa River, 2160 feet alt., Senga, August 30th, 1895.

"Bright green ova" (*R. C.*).

83. MYLOTHRIS AGATHINA.

Papilio agathina, Cramer, Pap. Exot. iii. pl. ccxxxvii. D, E (1782).

♀, Deep Bay, Lake Nyasa, Feb. 5th, 1896.

"Enormous number of yellow ova" (*R. C.*).

84. MYLOTHRIS CRAWSHAYI.

Mylothris crawshayi, Butler, P. Z. S. 1896, p. 124, pl. vi. fig. 4.

♂ ♂, Kasungu Mountain, Nyika, 7425 feet alt., March 2nd and 3rd, 1896.

85. NYCHITONA ALCESTA.

Papilio alcesta, Cramer, Pap. Exot. iv. pl. ccclxxix. A (1782).

Mpimbi plain, Upper Shiri River, March 24th and 25th, 1896.

The females contained "emerald-green ova, oblong and pointed" (*R. C.*).

86. COLIAS EDUSA.

Papilio edusa, Fabricius, Mant. Ins. ii. p. 23 (1787).

Kasungu Mountain, Nyika, Sept. 2nd, 1893; Cheni-Cheni Mountain, 6500 feet June 27th, 7400 feet June 30th; Kondowi, Lower Nyika, Nov. 30th, 1895; Kasungu Mountain, 5945 feet Feb. 29th, 7425 feet March 2nd, 7200 feet March 5th, 1896.

Most of the specimens are of the ordinary European type.

87. TERIAS LEONIS.

Terias leonis, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 222, pl. v. fig. 6 (1886).

♂, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

This is the first example I have seen from Central Africa.

88. TERIAS REGULARIS.

Terias regularis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).

♂. Kasungu Mountain, 7425 feet alt., Nyika, March 3rd, 1896

89. TERACOLUS MUTANS.

♀. *Teracolus mutans*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xix. p. 459 (1877); ♂. P. Z. S. 1896, p. 126.

♂ ♀, Mpimbi, Upper Shiri River, March 24th and 25th, 1896. Dry-season form.

Differs in the great enlargement of the discal series of spots on the secondaries, these being salmon-buff tinted in the male, and sulphur-yellow in the female; the primaries in the latter sex are also coloured more nearly as in the male, but the salmon-buff area is washed with yellow; on the under surface the whole colouring of the male and the bands upon the yellow area of the female are deeper and redder.

♂, Mwankanka, Loangwa River, Senga, Sept. 7th, 1895; ♀, Loangwa Valley forest, Senga, August 30th, 1895.

The female contained "pale orange ova" (*R. C.*).

When describing the male of *T. mutans* I compared it with *T. vesta* (meaning the southern species usually so-called); but *T. vesta* is an Abyssinian species, identical with *T. velleda* of M. Lucas, and differs from the South-African butterfly in the much brighter colouring, with somewhat differently formed and much redder bands on the under surface of the secondaries: the southern species is only the wet-season form of *T. argillaceus*, and is *T. vesta* of Trimen (*nec* Lucas); the latter, on the under surface, is much nearer to *T. aurigineus*, whereas *T. argillaceus* is certainly the southern representative of *T. mutans*.

90. TERACOLUS AURIGINEUS, var. VENUSTUS.

Teracolus venustus, Butler, P. Z. S. 1888, p. 94.

♂ ♂, ♀ ♀, Mbalizi Valley, 4375 feet alt., Unyika, August 25th; ♂, Mwewe's town, Nyika, August 26th; ♀, Kaun Guzi, 4620 feet, Unyika, August 27th; ♂, Chuona River (Mwewe's town), Sept. 15th, 1895.

At the last-mentioned locality Mr. Crawshay speaks of this butterfly as being plentiful; yet he seems only to have captured one male: it is the dry-season form of *T. aurigineus*, and until this collection came to hand was only represented by the typical male example from Kilima-njaro in the Museum series; nor have I seen it in any other collection.

91. TERACOLUS OPALESCENS.

♀. *Teracolus opalescens*, Butler, Ent. Month. Mag. xxiii. p. 30 (1886); ♂. P.Z.S. 1896, p. 125.

♂. Dry-season form.

On the upper surface this only differs from the male of the wet-season form in the absence of the black marginal spots to the secondaries; on the under surface, however, it differs in having the apical area and costal margin of the primaries and whole surface of secondaries flesh-pink, tinted on the costal borders and internervular folds with ochreous; the disc of the secondaries crossed by a series of brown dots. Expanse of wings 51 millim.

Bangara, W. coast of Lake Nyasa, August 18th, 1895. "If once missed, is exceedingly difficult to take" (*R. C.*).

The arrival of this example is particularly interesting to me, for it shows that my belief in the local constancy of some of the named forms of the *T. eris* group is, so far, borne out, the seasonal forms of this Eastern and Central African type being both easily separable from the more southern examples.

The type of *T. eris* was obtained at Ambukohl, in Lower Nubia, and is probably the true male of my *T. abyssinicus*, of which we only possess females: the figure agrees most closely with a male (wet-season form) received from Kilima-njaro, the orange apical spots on the primaries being short, the outer edge of the upper portion of the white area, beyond the cell, less oblique than in the southern forms, or than in *T. opalescens*, and the black costal belt of the secondaries extending on the disc to below the second subcostal branch; it, however, differs in having a small white spot near centre of outer margin of primaries, a character which may be variable. The southern forms are certainly not typical *T. eris*; nor can *T. johnstoni* be correctly called the dry-season form of the Natal examples presented to us by Mr. E. C. Buxton, inasmuch as the latter have the under surface of the wings pink, and must therefore themselves be the dry-season form of Mr. Trimen's *T. eris* (of which he says: "Underside—*Whitish or yellowish-white*") and identical with his variety A.

If, then, certain Lepidopterists prefer to regard the representative forms of *T. eris* as mere local phases of one species, the fact that each of them has its dry- and wet-season forms distinct from the others gives them at least a claim to be regarded as subspecies and to retain distinctive names.

92. TERACOLUS SUBFASCIATUS.

♂. *Teracolus subfasciatus*, Swainson, Ill. 2nd ser. iii. pl. 115 (1833).

♂, Mweniwandas, Nyasa to Tanganyika plateau, Dec. 15th, 1895. (Dry-season form.)

93. TERACOLUS REGINA.

♂ ♀. *Anthocharis regina*, Trimen, Trans. Ent. Soc. London, 3rd ser. i. p. 520 (1863).

Teracolus regina, Trimen, South Afr. Butt. ii. pl. xi. fig. 3, ♀ (1889).

♂, Loangwa Valley Pass, 4090 feet alt., Senga, August 28th; ♀, Mbalizi Valley, Unyika, Sept. 16th, 1895.

The female contained "pale yellow ova"; she was somewhat worn, having probably been long on the wing.

The receipt of these specimens, the male taken in the dry season and the female before the rains had fairly set in, is very interesting, as supporting the assertion that *T. anax* is the wet-season form of *T. regina*. The entire absence of the latter from any of the collections previously received by us from British Central Africa had led me to regard this statement with considerable doubt; but now I see no reason for rejecting it.

94. TERACOLUS PHLEGYAS.

Anthocharis phlegyas, Butler, P. Z. S. 1865, p. 431, pl. xxv. figs. 3, 3 *a* (1865).

Wet season, ♂ ♂, Deep Bay, March 9th, 1896.

Dry season, ♀ ♀, Loangwa Valley forest, August 30th, and Ntonga, Loangwa River, Senga, Sept. 13th, 1895.

After carefully studying the purple-tipped species, in relation to the question of seasonal dimorphism, I am forced to the conclusion that there is no reason for distinguishing the Eastern and Central African examples of *T. phlegyas* from those of the White Nile: they are slightly larger, but otherwise typical in both sexes.

T. phlegyas can hardly be a dry-season form of *T. imperator*, because the specimen of the male recorded above (and which is fairly typical) was obtained in the middle of the rains, whilst the females were obtained near the end of the dry season: on the other hand, we have a typical male of *T. imperator* taken in the middle of the dry season.

Furthermore, *T. imperator* cannot possibly be the *T. ione* of Godart, as assumed by my friend Trimen in his 'South African Butterflies.' Not only does the distribution of *T. imperator* render this highly improbable, but the description by M. Godart does not at all answer to it:—

T. ione.	*T. imperator.*
1. Black apical border divided obliquely by a violet band rounded externally.	1. Apical area violet, narrowly bordered with black.
2. A conspicuous black discocellular spot on the primaries.	2. A very faintly indicated discocellular dot, or none at all.
3. No transverse ray on under surface of secondaries.	3. A conspicuous oblique transverse ray on under surface of secondaries.

I do not doubt that M. Godart's description was made from a somewhat worn example of the South-African *T. speciosus*, to which it approaches much more closely than to any other violet-tipped *Teracolus*: it is the only known species which can be accurately described as having the apical black border "divided transversely and obliquely by a violet band, very brilliant, rounded externally": it is moreover, in my opinion, worthy of consideration that Dr. Boisduval, who (in the *Pierinæ* especially) was apt to cut species very fine indeed, regarded the southern insect as typical *T. ione*, as there can be little doubt that the Doctor had examined the original type.

One fact, however, must not be lost sight of:—Mr. Trimen includes *T. jalone* in the synonymy of his *T. ione* and says that he does not consider it to be even a marked variety. Now *T. jalone* has a conspicuous discocellular spot on the primaries, and its wet-season form has no more ray on the under surface than exists in *T. speciosus*; only the apical border is conspicuously dusted with white scales, and the violet band is too close to the inner edge of the coloured apical area to be correctly spoken of as an oblique band crossing the border at apex. Mr. Trimen gives "White Nile" as the locality of my type of *T. jalone*, and that certainly was the locality on the specimen. Should not this have suggested to him the possibility of *T. jalone* being the dry-season male of *T. phlegyas*, rather than a hardly separable variation of *T. imperator*? We certainly have one or two specimens which tend to link *T. phlegyas* and *T. jalone*; and the two male examples taken on March 9th represent the spotted and unspotted types, although neither of them has the pink under surface with transverse ray of the typical dry-season form *T. jalone*.

95. TERACOLUS HILDEBRANDTI.

Callomne hildebrandtii, Staudinger, Exot. Schmett. p. 44, pl. 23 (1884–88).

♂, Mrali, west coast of Lake Nyasa, Sept. 22nd, 1895.

A dry-season form of this species, which cannot easily be confounded with any form of *T. annæ*, but must stand between the latter and *T. eupompe*.

The dry-season form differs from the (typical) wet-season form in its superior size, the scarlet instead of orange colouring and greater width of the apical patch on the primaries, the greyer basal area and the pinky yellowish apical area of primaries and ground-colour of secondaries on the under surface; the black terminations to the nervures are also almost obliterated: it comes nearest to *T. annæ*, var. *wallengreni*, but the marginal spots are too small, the colouring below too yellow, and the scarlet above too pronounced.

96. TERACOLUS ACHINE, var. GAVISA.

Anthopsyche gavisa, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 13.

♀, Mpimbi, Upper Shiri River, March 24th, 1896. "Pale yellow oblong ova" (*R. C.*).

97. TERACOLUS SIPYLUS.

Teracolus sipylus, Swinhoe, P. Z. S. 1884, p. 444, pl. xl. fig. 11.

♂, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

This is supposed to be an extreme wet-season form of *T. evenina*: Mr. Trimen's note in his 'South African Butterflies,' vol. iii. p. 128, seems somewhat contradictory. Of *T. sipylus* he says:—"The male is inseparable from the larger darker specimens of male *evenina* ...., though it is somewhat more heavily marked." I consider *T. sipylus* to be a distinct representative form.

98. TERACOLUS PROCNE.

Anthopsyche procne, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 12.

Mpata, west of Lake Nyasa, August 2nd, 1895.

Probably only a varietal form of *T. theogene*; but both are dry-season forms, of which it is extremely likely that *TT. ocale*, *microcale*, *angolensis*, and *arethusa* are more or less localized wet-season forms.

99. TERACOLUS CINCTUS.

Teracolus cinctus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

Dry-season form ♂ ♀, Loangwa River, Senga, Sept. 5th and 13th, 1895.

Differs from the typical wet-season form in the reduction of the internal black streak on the primaries, which is represented by a greyish smear ending in a darker spot, and in the rosy colouring of the secondaries on the under surface.

100. TERACOLUS SUBFUMOSUS.

Teracolus subfumosus, Butler, P. Z. S. 1876, p. 139, pl. vi. fig. 3.

♂, Loangwa River, Senga, Sept. 12th, 1895.

This is doubtless a wet-season form of some other named *Teracolus* and allied to *T. eione*: it is not at all likely to be a form of the West-African *T. antigone*, unless the latter can be linked by a perfect series of intergrades to *T. eione*, which at present I am not prepared to admit to be a fact. If *T. antigone* and *T. eione* are distinct species (as claimed in the 'South African Butterflies'), the forms from Western Africa must be kept separate from those of the South. *T. phlegetonia* is allied to *T. eione*, but does not closely agree with it in pattern, though both represent the extreme wet-season types of the country which they inhabit. In like manner, *T. xanthus* will probably prove to be a wet-season form of *T. odysseus*, inasmuch as both forms inhabit the White Nile, and are so much alike that their proper females were originally transposed; the differences between them are similar to those which exist between *T. eione* and *T. subfumosus*, or between *T. phlegetonia* and *T. antigone*. As might be expected of West Coast forms, no extreme dry-season types seem to occur: the pattern of *T. antigone* represents the latter, but the rosy colouring on the under surface, characteristic of Southern, Eastern, and Northern types, is wanting.

101. TERACOLUS INCRETUS.

♀. *Teracolus incretus*, Butler, Ent. Month. Mag. xviii. p. 146 (1881).

♂. *Callosune vulnerata*, Staudinger, Exot. Schmett. pl. 23.

♀, Kawembi, N.W. coast of Lake Nyasa, Sept. 23rd, 1895.

102. BELENOIS THYSA, var. SABRATA.

♂. *Belenois sabrata*, Butler, Trans. Ent. Soc. London, 1870, p. 526.

♂, Mtambwi Hill, west of Lake Nyasa, Feb. 20th; ♀, Mpimbi Plain, Upper Shiri River, March 25th, 1896.

"Oblong yellow ova" (*R. C.*).

The largest specimens of the species which I have seen, and, apparently, the only form taken in Nyasa-land. It differs from typical *B. thysa* in the narrower black border at apex of primaries and the more dentate-sinuate (rather than zigzag) character of the inner edge of the outer border; the subapical spots well separated from the border, though touching the black veins in the female. The type of *B. sabrata* was an unusually small example. A very curious female of *B. thysa*, with glaucous greyish apex of primaries and ground-colour to secondaries below, was obtained on the Chuona River (Mwewe's), Unyika, August 26th, 1895.

103. ERONIA LEDA.

Dryas leda, Boisduval, Voy. de Deleg., App. p. 588 (1847).

♂, Mpimbi, Upper Shiri River, March 24th, 1896.

104. PAPILIO PSEUDONIREUS.

Papilio pseudonireus, Felder, Reise der Nov., Lep. i. p. 94 (1865).

Kasungu Mountain, 7425 feet alt., Nyika, March 1st to 4th, 1896.

105. PAPILIO PHORCAS.

♂. *Papilio phorcas*, Cramer, Pap. Exot. i. pl. ii. B, C (1775).

♂ ♂, ♀, Kasungu Mountain, 7425 feet alt., Nyika, March 1st, 1896.

"Fairly plentiful, but very difficult to take, as it flies high, skimming the trees, and rarely comes down within reach." The female contained "large spherical boiled-sago-coloured ova" (*R. C.*).

All the specimens were more or less shattered, the female with the same green bands and spots as the male; all the specimens with the subapical patch on the primaries rather smaller than in Western examples.

106. PAPILIO HORRIBILIS.

Papilio horribilis, Butler, Lep. Exot. p. 88, pl. xxxiv. fig. 2 (1872).

♂, Kasungu Mountain, 7425 feet alt., Nyika, March 1st, 1896.

"A pair only seen, floating round in the air, in an opening on the outskirts of a vast forest; spent something like half an hour in waiting to capture one; the other disappeared" (*R. C.*).

107. SARANGESA ASTRIGERA.

Sarangesa astrigera, Butler, P. Z. S. 1893, p. 669; Holland, l. c. 1896, pl. ii. fig. 8.

Fuleriva forest, Deep Bay, Feb. 28th and March 6th, 1896.

108. SARANGESA MOTOZI.

Pterygospidea motozi, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 53.

Virauli Hill, Nyasa to Tanganyika Road, August 22nd, 1895.

109. SARANGESA PERTUSA.

Sape pertusa, Mabille, C.R. Soc. Ent. Belg. 1891, p. lxviii.

Henga, W. of Lake Nyasa, June 26th, and Loangwa River, Senga, Sept. 5th, 1895.

"Local, frequents shady nooks, holes, and hollows" (*R. C.*).

One example nearly approaches *S. motozi* on the upper surface, but differs in the absence of yellow-ochre blotches and spots on the under surface; other specimens barely differ (if at all) from *S. synestalmenus*, Karsch.

110. SARANGESA HOLLANDI, sp. n. (Plate XLII. fig. 1.)

♂. General form of *S. pertusa*, excepting that the costa of primaries is proportionately longer, and the outer margin consequently less arched and more oblique. Above golden-bronze-brown; all the vitreous white spots small and edged with blackish: primaries with two superposed vitreous spots at basal third of interno-median areole, two near the end of discoidal cell forming a broken >, two near base of median areoles, the lower one large and irregularly diamond-shaped, two black dots below the latter, the upper one with a white central point, three subapical spots (the first very small), and below them two blackish spots; fringe buff, excepting near external angle, where it is white, varied with blackish spots at the ends of the nervures and with a slender blackish subbasal line: secondaries with a small spot at the end of the cell, almost encircled by a series of ten spots, mostly with small vitreous centres; fringe brown at apex, sordid at anal angle, otherwise white, spotted with blackish at the end of each nervure: body darker than the wings, with two white dots at each side of the head against the eyes; antennæ smoky brown. Primaries below irrorated with pale lilac; the vitreous spots white-edged and therefore apparently larger, those in the cell united so as to form a perfect >; internal border whity brown: secondaries whitish lilac, irrorated with bronze-brown on costal area and external border almost to anal angle; vitreous spots with golden-brown margins; fringe as above: body below white, faintly lilacine at the sides of the pectus and brown at the sides of the venter. Expanse of wings 41 millim.

Mbalizi Valley, Unyika, August 25th, 1895.

This species has such a familiar aspect, that I had hoped, with the assistance of Dr. Holland's most valuable monograph, to be able to find a published name for it; but, not having done so, I have taken the liberty of dedicating it to that most energetic and painstaking Lepidopterist.

111. TAGIADES FLESUS.

Papilio flesus, Fabricius, Spec. Ins. ii. p. 135 (1781).

Leya stream, Deep Bay, June 4th, 1895.

112. EAGRIS JAMESONI.

Antigonus jamesoni, Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. vi. p. 348 (1890).

Chuona River (Mwewe's town), Unyika, Sept. 14th; Lampi River, Lower Nyika, Oct. 21st, 1895.

113. ABANTIS (SAPÆA) TRIMENI.

Sapœa trimeni, Butler, P. Z. S. 1895, p. 264, pl. xv. fig. 5.

Loangwa River, Senga, Sept. 10th, 1895.

I wish I could agree with Dr. Holland in thinking this identical with Westwood's species; but, as the species most nearly allied to the latter and this (*A. paradisea*) invariably has the sides of the abdomen ochreous, and the number of segments said by Westwood to be luteous does not correspond with the number of segments which are white in *A. trimeni*, I consider that, until specimens of the latter are received from the same locality as that of Westwood's type, I still have the stronger case.

114. GORGYRA JOHNSTONI.

Aeromachus? *johnstoni*, Butler, P. Z. S. 1893, p. 673.

Gorgyra johnstoni, Holland, P. Z. S. 1896, p. 32, pl. ii. fig. 6.

♂, Deep Bay, Feb. 6th; ♂, ♀ taken *in coitû*, Feb. 15th, 1896. ♀. "Pale yellow ova" (*R. C.*).

The sexes are absolutely alike.

115. OXYPALPUS RUSO.

Pamphila ruso, Mabille, C.R. Soc. Ent. Belg. vol. xxv. p. clxxxiii (1891).

Oxypalpus ruso, Butler, P. Z. S. 1893, p. 669; Holland, l. c. 1896, p. 39, pl. iii. fig. 13.

Mtambwi Hill, Feb. 20th; Kondowi, 4000 feet alt., Nyika, Feb. 21st; Kasungu Mountain, 7425 feet alt., Nyika, March 4th, 1896.

This pretty species varies a good deal on both surfaces; the black longitudinal streak on the primaries above is frequently divided longitudinally by an ochreous median vein, and transversely by an orange-ochreous bar just before the end of the cell; the ochreous longitudinal stripe of the secondaries is sometimes expanded so as to leave only a narrow black costal border; on the under surface there is occasionally a subapical decreasing series of five cream-coloured spots divided only by the nervures (which are dull orange), and the secondaries are cream-coloured, with orange-tawny veins and internal streak: intergrades between the extremes occur.

116. CYCLOPIDES PEREXCELLENS. (Plate XLII. fig. 2.)

Cyclopides perexcellens, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 161 (1896).

Kasungu Mountain, 7425 feet alt., Nyika, March 2nd and 5th, 1896.

117. CYCLOPIDES QUADRISIGNATUS.

Cyclopides quadrisignatus, Butler, P. Z. S. 1893, p. 670, pl. lx. fig. 9.

Kasungu Mountain, 6200 feet alt., March 1st; 7425 feet, March 2nd, 3rd, and 6th, Nyika.

Every fresh collection brings additional evidence of the variability of this species. The example obtained on March 6th has the two obliquely-placed orange spots just beyond the middle of the primaries unusually large and confluent, two small costal spots being only separated from them by the subcostal nervure. At first sight this variety might be taken for a modification of *C. midas*, but it is not only too dark, both in ground-colour and spots, but the inner of the two costal spots (which doubtless represents the basal orange dash in *C. midas*) is much too far from the base to be characteristic of that species, whilst the absence of the spot in the discoidal cell of the secondaries is characteristic of *C. quadrisignatus*.

118. CYCLOPIDES MIDAS.

Cyclopides midas, Butler, P. Z. S. 1893, p. 671; 1895, p. 265, pl. xv. fig. 6.

Chuona River (Mwewe's), Unyika, August 26th, 1895.

The damaged aberrant examples recorded under this species in my paper on Mr. Scott Elliot's collection prove to be extreme forms of the preceding species: I had thought it impossible that *C. quadrisignatus* could vary so much. *C. midas* is tolerably constant.

119. GEGENES LETTERSTEDTI.

Hesperia letterstedti, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 49.

Kasungu Mountain, 7425 feet alt., Nyika, March 4th, 1896.

The only objection which I can see to *G. obumbrata* (=*hottentota*) being a form of the above species, is the presence of a well-defined brand on the primaries of the male: no trace of this brand is visible on any of our examples of either the yellowish or the smoky-brown variety of *G. letterstedti*.

120. ANDRONYMUS PHILANDER.

Pamphila philander, Hopffer, Monatsber. Akad. Wiss. Berl. 1855, p. 643; Peters' Reise nach Mossamb., Zool. v. p. 416, pl. xxvii. figs. 1. 2 (1862).

♀ ♀, Mtambwi Hill, W. of Lake Nyasa, Feb. 22nd, 1896.

"Large dark yellow ova" (*R. C.*).

I am very glad that Dr. Holland has made this the type of a new genus; it was quite out of place in *Acleros*.

HETEROCERA.

121. CEPHONODES HYLAS.

Sphinx hylas, Linnæus, Mantissa, i. p. 539 (1771).

♂ ♀, Deep Bay, Feb. 16th and March 10th, 1896.

"Frequents the beds of *Azineas* in the fort, but is not plentiful" (*R. C.*).

The female contained "bright emerald-green ova."

122. MACROGLOSSA TROCHILOIDES.

Macroglossa trochiloides, Butler, P. Z. S. 1875, p. 5.

Kasungu Mountain, 7425 feet alt., Nyika, March 4th, 1896.

A beautiful and perfectly typical example of this race.

123. BASIOTHEA IDRICUS.

Sphinx idricus, Drury, Ill. Nat. Hist. iii. pl. 2. fig. 2 (1773).

♀, Deep Bay, Feb. 18th, 1896.

"Day-flyer: emerald-green ova" (*R. C.*).

The most perfect specimen that I have seen of this tiny green-winged Hawk-moth.

124. CHÆROCAMPA ESON, var. GRACILIS.

Chærocampa gracilis, Butler, P. Z. S. 1875, p. 8, pl. ii. fig. 2.

♀, Deep Bay, Feb. 22nd, 1896.

"Light sea-green ova" (*R. C.*).

Chiefly differs from the Southern form (typical *C. eson*) in its narrower wings, with more oblique outer margin.

125. XANTHOSPILOPTERYX PERDIX.

Eusemia perdix, Druce, P. Z. S. 1887, p. 668.

Eusemia eoa, Mabille, Bull. Soc. Ent. France, 1890, p. 123; Novit. Lepid. pl. xi. fig. 1 (1892).

♀, Deep Bay, Feb. 11th, 1896.

"About as common, perhaps, as the 'Cream-spot tiger' in Great Britain. Emerald-green ova" (*R. C.*).

The first example that I have seen of this pretty species.

126. ÆGOCERA INCLUSA.

♀. *Pristocerœa? inclusa*, Karsch, Ent. Nachr. 1895, p. 357, Taf. ii. fig. 5.

♂, Virauli Mountain, Nyasa to Tanganyika plateau, Dec. 14th, 1895.

"Fairly plentiful" (*R. C.*).

Quite new to the Museum series: Mr. Kirby is of opinion that it is the same as *Metagarista rendalli*, Rothsch., and it is quite possible that he may be correct.

127. ÆGOCERA MENETA.

Noctua meneta, Cramer, Pap. Exot. i. pl. lxx. D (1775).

Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

128. CHARILINA AMABILIS.

Noctua amabilis, Drury, Ill. Exot. Ent. ii. pl. 13. fig. 3 (1773).

Deep Bay, Feb. 10th and 13th, 1896.

129. ZANA SPURCATA.

Antheua spurcata, Walker, Cat. Lep. Het. xxxi. p. 298 (1864).

♀, Mweniwanda's, Nyasa to Tanganyika plateau, Dec. 15th, 1895.

130. PHALERA LATIPENNIS, sp. n. (Plate XLII. fig. 3.)

♂. Broader in the wings than any other species of the genus; the antennæ broadly pectinated as in *P. argentifera*; the upper radial of the primaries springing from the anterior angle of the cell, instead of from the subcostal; general scheme of colouring recalling *P. flavescens*. Primaries above creamy white; base of costa sprinkled with black and brick-red scales; a band of red scales crossing the wing at about basal third and followed immediately by a band of black scales, both divided by the pale nervures; two or three ill-defined greyish and testaceous stripes across the middle of the wing; at external two-sevenths is a broad belt almost parallel to outer margin, consisting first of a subangulated oblique series of black lunules, immediately followed by a more or less lunulate brick-red stripe, somewhat blackish in the centre, and lastly by a grey band irrorated with black and separating into vague lunules towards apex; a few ill-defined submarginal spots of black scales: secondaries sericeous ochreous, veins dusty, becoming black at apex and on outer margin: head, collar, and centre of thorax brownish ochreous; antennæ black; pterygodes and metathorax white, somewhat ochreous at the sides; an oblique black bar on the front of the pterygodes; abdomen reddish ochreous, with grey dorsal patches on each segment. Wings below ochreous, the veins chiefly black beyond the middle; the primaries from beyond the cell dusted with grey; a submarginal series of ochreous lunules; a partly zigzag dusky marginal border, interrupted on the fringe by ochreous spots: secondaries with a slender black marginal line: body below deep ochreous; tibiæ, tarsi, and venter more or less blackish. Expanse of wings 55 millim.

Luvira River, Nyasa to Tanganyika plateau, Dec. 14th, 1895.

It is possible that this species may eventually be separated from *Phalera* as the type of a new genus, but at present there does not seem sufficient evidence of the importance of the characters which differentiate it to warrant its being thus distinguished; the width of the wings and the antennal characters are not uniform in the genus, whilst the position of the upper radial is the same as in *P. sigmata*.

131. PANTOCTENIA GEMMANS.

Pantoctenia gemmans, Felder, Reise der Nov., Lep. iv. pl. lxxxii. fig. 16 (1874).

Kasungu Mountain, 7425 feet alt., Nyika, March 2nd, 1896.

132. TÆDA PRASINA. (Plate XLII. fig. 4.)

Tæda prasina, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 161 (1896).

Luvira River, Nyasa to Tanganyika plateau, Dec. 14th, 1895.

SCOTINOCHROA, gen. nov.

Allied to *Cosuma*, neuration the same; antennæ longer and more uniformly pectinated; palpi totally dissimilar—much longer, falciform, the second joint long, subcylindrical, somewhat flattened internally, directed obliquely upwards, third joint half the length of the second, somewhat acuminate; tarsi of front pair of legs not fringed as in *Cosuma*, and those of the second and third pairs rather penicillated than fringed, each joint having a fairly well-defined separate flattened tuft at the back.

133. SCOTINOCHROA INCONSEQUENS, sp. n.

Primaries above vinaceous chocolate-brown, sprinkled with shining, mostly leaden-grey scales; a D-shaped spot at the end of the cell, connate with an oblique irregular band from costa near apex to inner margin, this band is narrowest and inarched at its upper extremity, widest towards the inner margin; both spot and band are mostly whity brown externally and shining leaden grey in the middle, and are bounded internally by irregular black dashes and externally by a black line; from the cell downwards the inner margin of the band is zigzag and the outer margin undulated, and followed by an abbreviated similar band, which, however, has no leaden central scales (and therefore stands out as a pale patch with undulated outer margin): secondaries pale sericeous vinaceous, showing slight greenish reflections in certain lights; the abdominal border and base of fringe sienna or golden brownish; centre of fringe blackish, tips shining dark vinaceous: body deep chocolate-brown, sprinkled with shining leaden scales; the posterior edges of the collar and bases of the metathoracic and abdominal tufts somewhat ochreous; antennæ pale sericeous brown. Under surface of wings sericeous pale brown, darker towards costal area, somewhat vinaceous, fringes distinctly so; primaries blackish in the cell and with a glistening internal area: body below glossy vinaceous chocolate-brown, the extremities of leg-joints and the last joint of the palpi somewhat ochraceous. Expanse of wings 82 millim.

Deep Bay, Feb. 5th, 1896.

134. THYRETES PHASMA, sp. n.

♀. Very close to *T. caffra*, but easily distinguished from the fact that the hyaline triangular spot in the cell of primaries fills the upper instead of the lower angle; also the inner edge of the hyaline belt from median vein to apex is not irregular but forms a direct oblique line, the second division from the apex being much elongated backwards; the brown border of the secondaries is also narrower. Expanse of wings 37 millim.

Deep Bay, Feb. 18th, 1896.

"Pale green ova" (*R. C.*).

135. ARGINA OCELLINA.

Deiopeia ocellina, Walker, Cat. Lep. Het. ii. p. 571 (1854).

♂ ♀, Deep Bay, Feb. 27th, 1896.

"Fairly common, a day-flyer, sits on grass-stalks" (*R. C.*).

DICTENUS, gen. nov.

Allied to *Setinochroa*, of exactly the same form; but differing utterly in the character of the antennæ, which are solidly bipectinated, the pectinations widely separated and emitting short bristles: the primaries with only four branches to the subcostal vein, the fork of the united third and fourth branches being longer than in *Setinochroa* and more divergent; secondaries with the subcostal furca considerably shorter and the footstalk consequently very much longer than in that genus.

136. DICTENUS INCONSTANS, sp. n. (Plate XLII. fig. 5.)

Wings bright ochreous, the primaries with a conspicuous black spot at the end of the cell; basal half of costal border black; the remaining half sometimes black, as well as a broader outer border and narrow internal border: body black, collar, pterygodes, and metathorax clothed with ochreous hair; anal tuft ochreous: wings below nearly as above, but the secondaries with a small blackish spot at the end of the cell: body below black; tibiæ and tarsi of middle and hind legs ochreous tipped with black. Expanse of wings 20 millim.

Kasungu Mountain, 7425 feet alt., Nyika, March 2nd and 5th, 1896.

137. LEPTOSOMA APICALE.

Nyctemera apicalis, Walker, Cat. Lep. Het. ii. p. 395 (1854).

♀ ♀, Deep Bay, May 16th, 1895.

" Light yellow ova " (*R. C.*).

138. SPILOSOMA AURICINCTUM, sp. n. (Plate XLII. fig. 6.)

Nearest to *S. purum* (*Alpenus purus*), but easily distinguishable from the fact that the head and the collar are bordered at the back with bright ochreous; the primaries are more produced, the costal margin being longer and the black dots are few, small, and confined to the base and costal area; the secondaries only show three conspicuous black spots in the form of a triangle, the apex of which is represented by a spot at the end of the cell and the base by two submarginal spots; primaries below immaculate, but secondaries as above. Expanse of wings 44 millim.

♀, Fuleriva hills, 2000 feet alt., Deep Bay, March 5th, 1896.

This species and *S. purum* are strikingly unlike the other Ermine Moths from the fact that both extremities of the bright golden-ochreous black-dotted abdomen are snow-white. Our examples of *S. purum* from British East Africa show no trace of the dorsal black dots, but otherwise are typical.

139. AROA TERMINALIS.

Aroa terminalis, Walker, Cat. Lep. Het. iv. p. 794 (1854).

♂, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

Walker's description, having been based upon a badly rubbed and barely recognizable specimen, is utterly useless for the identification of the species; I therefore redescribe the insect from Mr. Crawshay's beautiful male example:—Primaries above deep yellowish testaceous or bright mustard-yellow; a paler central band with widely bisinuated outer edge, expanding within the cell to enclose a conspicuous rounded blood-red spot; a pale band crossing the disc near the outer margin, its inner edge bisinuated, its outer edge correspondingly biundulated; fringe very slightly paler than the ground-colour; secondaries deep orange-ochreous with bright golden yellow fringe; antennæ yellow, with vinaceous brown pectinations; body ochreous, deepest on the abdomen: under surface bright saffron-yellow, the primaries irrorated with smoky brown scales towards apex forming two short divergent streaks; legs hairy, lemon-yellow. Expanse of wings 33 millim.

Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

I believe the specimen noted (P. Z. S. 1896, p. 135) as *Lopera crocata* var.? is probably a very badly discoloured and faded example of this species.

140. AROA BISTIGMIGERA, sp. n. (Plate XLII. fig. 7.)

♂. Nearest to *A. clara*: upper surface dead golden, or dull ochraceous, suffused with vinaceous greyish; fringe deep grey;

primaries with two conspicuous black spots at the end of the cell; secondaries with a fairly broad smoky black border; body smoky black; shaft of antennæ, head, collar, shoulders, and anal tuft ochreous: wings below paler than above, primaries with a large almost semicircular subapical blackish patch from end of cell; body below ochreous, blackish at the sides. Expanse of wings 27 millim.

♂ ♂, Kondowi, 4000 feet alt., Nyika, Feb. 21st, 1896.

"Day flier" (*R. C.*).

The sexes in this genus differ so much that it would not greatly surprise me to discover that the following form was the female of *A. bistigmigera*: at the same time, as Sir George Hampson points out, the pattern is so dissimilar that it would be absurd to put the two together without trustworthy proof of their identity: then again it is just as likely that *A. ochraceata* (which we have received from Zomba) may be the female of this species, inasmuch as it often has two spots at the end of the cell of primaries, though in other respects it is utterly dissimilar.

141. Aroa charax, Druce. (Plate XLII. fig. 8.)

♀. Upper surface tawny orange with broad smoky brown outer borders, that of the primaries occupying the apical third of the wing and crossed by blackish veins (which colouring commences on the orange area); border of secondaries abruptly narrowed towards anal angle; fringes sericeous, dark grey; a conspicuous black spot at the end of each discoidal cell; primaries with narrow dusky costal margin, three small black spots across the base; antennæ and third joint of palpi black; abdomen paler than thorax, golden ochreous with a dorsal series of black spots: wings below nearly as above, no subbasal spots on the primaries: body below bright ochreous; tarsi of all the legs and tibiæ of front and middle pairs black. Expanse of wings 43 millim.

Deep Bay, April 30th, 1895.

142. Lymantria bananæ, sp. n. (Plate XLII. fig. 9.)

♂. Primaries semitransparent cream-coloured, the basal third smoky brown, bisinuated in front; costa to end of cell the same colour confluent with a constricted Y-shaped bar which crosses the end of the cell; an oblique zigzag smoky-brown line, incurved towards costa, across the disc; a marginal irregular patch of the same colour near apex, and a second at external angle, also an intermediate small triangular intermediate spot; veins, excepting from the end of the cell to the apex, partly brown and partly blackish; and all the veins as they cross the zigzag line blackish: secondaries semitransparent pale golden ochreous, more opaque and more distinctly ochreous on abdominal two-fifths: body above tawny ochraceous, palest at the extremities, somewhat vinaceous on the thorax; antennæ and tips of palpal joints black: under surface of wings immaculate; body cream-coloured, a few orange hairs on front of pectus; sides of venter ochreous. Expanse of wings 50 millim.

Mpata, W. coast of Lake Nyasa, August 21st, 1895.

"Taken in a banana plantation" (*R. C.*).

We have a nearly allied species in the Museum collection from Old Calabar.

143. MARDARA CURVIVIRGATA.

Lælia curvivirgata, Karsch, Ent. Nachr. 1895, p. 373, Taf. iv. fig. 3.

♂, Lower Nyika, 4200 feet alt., June 30th, 1895.

This species is closely related to my *M. peculiaris* from Madagascar, but differs in the fact that the golden-brown band across the primaries runs to the apex instead of to the costal margin

144. HIBRILDES NORAX.

Hibrildes norax, Druce, P. Z. S. 1887, p 675.

Anengya spiritalis, Karsch, Ent. Nachr. 1895, p. 374, pl. iv. fig. 7.

♂, Mweniwanda's, Nyasa to Tanganyika Road, Dec. 22nd, 1895.

145. HIBRILDES CRAWSHAYI.

Hibrildes crawshayi, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 162 (1896).

♀, Mwini-uruma's town, Nyasa to Tanganyika plateau, Dec. 17th, 1895.

It is of course possible that the sexes of *H. norax* may be utterly dissimilar in colour and pattern, and that this may prove to be its female: if so, Mr. Kirby's two new species will also be sexes.

146. PSEUDAPHELIA APOLLINARIS.

Saturnia apollinaris, Boisduval, Voy. de Deleg. ii. p. 601 (1847).

Namitembo, Zomba Mountains, March 25th, 1896.

"Huge quantity of pale yellow ova" (*R. C.*).

147. ANTHERÆA DOLABELLA.

Antheræa dolabella, Druce, P. Z. S. 1886, p. 409, pl. xxxviii. fig. 2.

♀, Kasungu Mountain, 7020 feet alt., Nyika, March 1st, 1896.

"Large spherical whitish-yellow ova" (*R. C.*).

It is unfortunate that the single example of this rare species obtained by Mr. Crawshay was a good deal worn.

148. TRIGONODES HYPPASIA.

Phalæna-Noctua hyppasia, Cramer, Pap. Exot. iii. p. 99, pl. ccl. fig. E (1782).

♀, Deep Bay, March, and Oct. 18th, 1896.

"Bright green ova" (*R. C.*).

149. Patula walkeri.

Patula walkeri, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xvi. p. 406.

Zambezi River, East Africa, April 16th, 1896.

Perhaps this ought to be included in the present paper, but it was not sent with the Nyasa collection.

150. Argadesa materna.

Phalæna-Noctua materna, Linnæus, Syst. Nat. ii. p. 840.

Deep Bay, Oct. 9th, 1895.

151. Hæmatorithra rubrifasciata.

Hæmatorithra rubrifasciata, Butler, Ann. & Mag. Nat. Hist ser. 6, vol. xviii. p. 162 (1896).

Deep Bay, Feb. 26th, 1896[1].

152. Hyria angusta, sp. n.

Primaries above dull vinaceous purple; a broad oblique central golden ochreous band from inner margin to above the median vein, impinged upon at its anterior extremity by a blackish spot at the end of the cell; fringe golden ochraceous, somewhat stained with dull purplish at the base: secondaries bright golden ochreous, with a black dot at the end of the cell; outer border and basal half of fringe dull vinaceous purple: body sericeous dark vinaceous greyish; shaft of antennæ silvery, slightly buffish at base: under surface of wings nearly as above, but the basi-internal area of primaries sericeous and somewhat silvery; legs and centre of venter pale buff. Expanse of wings 14 millim.

Kasungu Mountain, 7200 feet alt., Nyika, March 5th, 1896.

"Day flier" (*R. C.*).

EXPLANATION OF THE PLATES.

Plate XLI.

Fig. 1. *Amauris crawshayi*, p. 821.
2. *Panopea heliogenes*, p. 823.
3. *Planema scalivittata*, p. 826.
4. *Alæna reticulata*, ♂, p. 827.
5. *Cyclyrius juno*, p. 830.
6. *Capys connexiva*, ♂, p. 831.
7. *Iolaus auricostalis*, ♀, p. 832.

Plate XLII.

Fig. 1. *Sarangesa hollandii*, p. 840.
2. *Cyclopides perexcellens*, p. 842.
3. *Phalera latipennis*, p. 844.
4. *Tæda prasina*, p. 845.
5. *Dictenus inconstans*, p. 846.
6. *Spilosoma auricinctum*, p. 847.
7. *Aroa bistigmigera*, p. 847.
8. ,, *charax*, p. 848.
9. *Lymantria bananæ*, p. 848.

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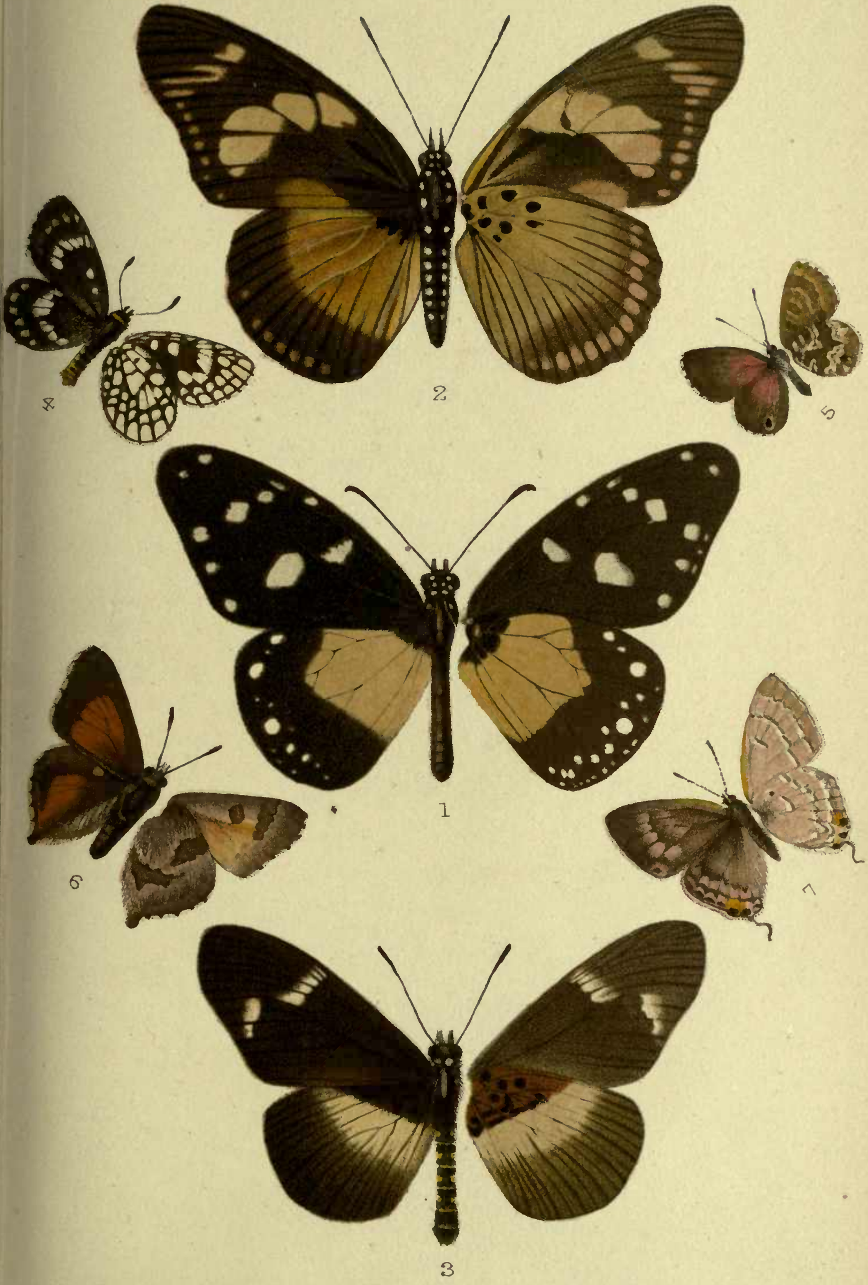
[1] Caught by Mr. G. A. Taylor.

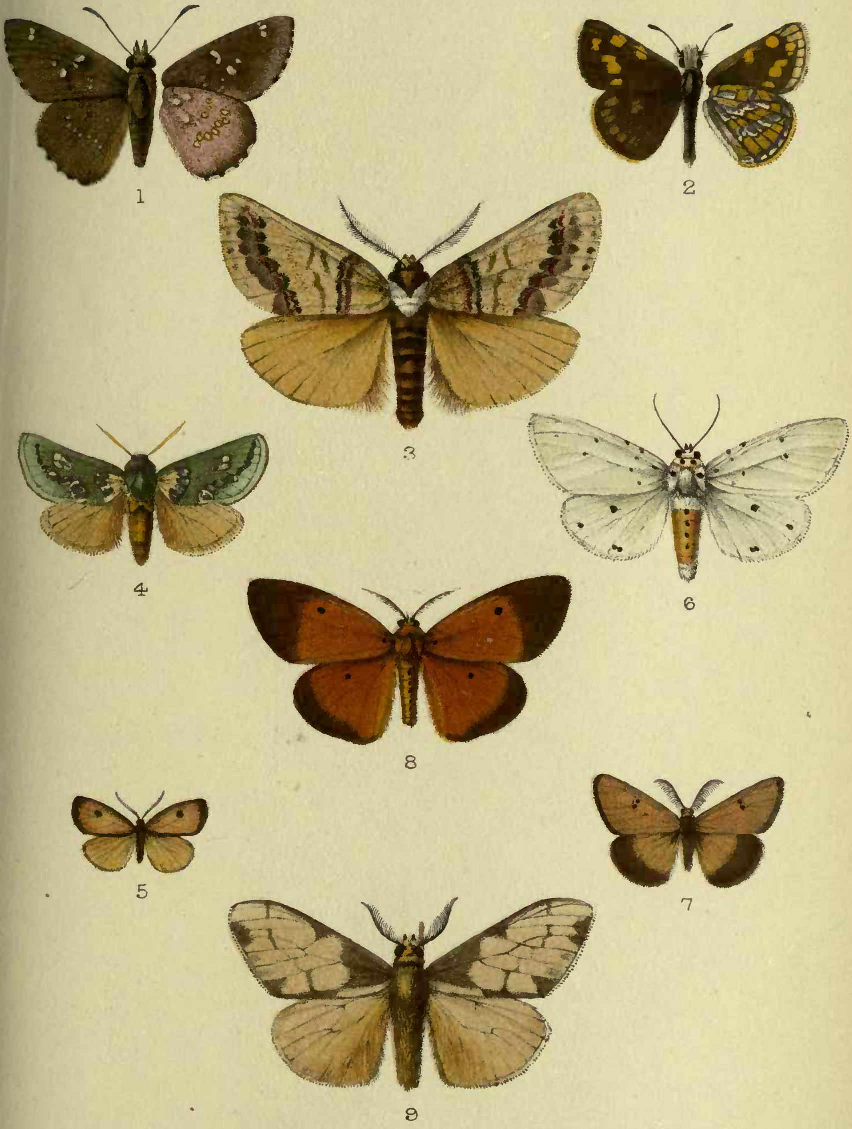


E.C.Knight del.et lith.

West, Newman chromo

New Lepidoptera from Nyasa-land.

Collected by M^r Crawshay



E.C Knight del. et lith.
West, Newman chromo.

New Lepidoptera from Nyasa-land.

Collected by Mr. Crawshay

Nov. 1896

On a Collection of Lepidoptera from Nyasa-land presented to the Museum by Sir Harry Johnston, K.C.B., and collected by Mr. J. B. Yule. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., Senior Assistant-Keeper, Zoological Department, British Museum.

(Plate XLIII.)

From the few notes as to exact localities which occurred on the envelopes it would seem that the present collection was obtained partly, if not altogether, on the Songwe plain, N.W. Nyasa, in 1895; but so very few of the specimens are accompanied by notes as to locality and date of capture, that I have not thought it advisable to burden the 'Proceedings' by repeating references to descriptions and figures, most of which have already been given in other papers on Nyasa Lepidoptera published in the Society's 'Proceedings.'

The collection contains examples of five new species and of a new form of a known species; but, in addition to these, there are several species of interest, such as the wet-season form of *Ypthima granulosa*; examples of the broad-bordered variety of *Charaxes saturnus*, to which I gave the name of *laticinctus*; a somewhat worn female example of the rare *Charaxes violetta*; the white variety of *Euralia mima*; additional examples of *Metacrenis crawshayi*; a curious variety of the female of *Alæna nyassæ* having the base of the posterior wings white; both wet- and dry-season forms of *Teracolus opalescens*; the rare *Teracolus hildebrandtii*; a dry-season female of *Teracolus subfasciatus*, differing in its superior size, the larger apical orange patch on the primaries being without inner blackish limitation, and the under surface more strongly reticulated; both seasonal forms of *Teracolus emini*; the male of *Belenois diminuta*, showing that the latter is the dry-season form of *B. crawshayi*; a good series of *Papilio nivinox*, consisting entirely of males (as the only example which we possess of *P. taboranus* is a female, it seems probable that the differences in pattern and colouring between these two forms of *Papilio* are due to sex, in which case the name of *P. taboranus* will have to stand for the species); an example in good condition of a rare Hesperiid (*Cyclopides willemi*), of which the Museum previously only possessed a broken example.

Among the Moths, the most interesting additions, apart from the new species, are two male examples of *Hibrildes norax*. Respecting *Hibrildes* we know very little at present: if the female resembles the male, no examples have hitherto been received; but it is possible that the sexes may be entirely dissimilar, and that my *Hibrildes crawshayi* may eventually prove to be the female, though at present we have not the least evidence in proof of such sexual incongruity. The genus is a Pterothysanid, and the few species of that group in which the sexes are known exhibit no marked sexual differences of pattern and coloration.

The following is a list of the species in this collection :—

RHOPALOCERA.

1. Limnas chrysippus, *Linn.*, and var. *klugii*, Butl.
2. Tirumala petiverana, *Doubl.*
3. Melanitis solandra, *Fabr.*
4. Samanta perspicua, *Trimen.*
5. Mycalesis eusirus, *Hopff.*
6. —— ena, *Hewits.*
7. Physcænura pione, *Godm.*, * var. *lucida*, Butl.
8. Ypthima granulosa, *Butler.*
9. Charaxes castor, *Cramer*, var. *flavifasciatus*, Butl.
10. —— saturnus, *Butler*, and var. *laticinctus*, Butl.
11. —— achæmenes, *Felder.*
12. —— guderiana ♂, *Dewitz.*
13. —— phæus ♂, *Hewits.*
14. —— violetta ♀, *Grose Smith.*
15. —— tiridates ♀, *Fabr.*
16. —— bohemani, *Felder.*
17. —— candiope, *Godart.*
18. Hypolimnas misippus, *Linn.*, ♀ =*inaria*, Cram.
19. Euralia wahlbergi, *Wallgr.*
20. —— mima var., *Trimen.*
21. Junonia sesamus, *Trimen.*
22. —— simia, *Wallgr.*
23. —— galami, *Boisd.*
24. —— elgiva, *Hewits.*
25. —— artaxia, *Hewits.*, and var. *nachtigalii*, Dewitz.
26. —— boopis, *Trimen.*
27. —— clelia, *Cramer.*
28. —— cebrene, *Trimen.*
29. —— natalica, *Felder.*
30. Protogoniomorpha anacardii, *Linn.*
31. Euphædra neophron, *Hopff.*
32. Euryphene cocalia, *Fabr.*
33. Pseudargynnis hegemone, *Godt.*
34. Metacrenis rosa, *Hewits.*
35. —— crawshayi, *Butl.*
36. Hamanumida dædalus, *Fabr.*
37. Catuna crithea, *Drury.*
38. Neptis agatha, *Cramer.*
39. Atella columbina, *Cramer.*
40. Byblia vulgaris, *Staud.*
41. Acræa cabira, *Hopff.*
42. —— serena, *Fabr.*, var. *perrupta*, Butler.
43. —— natalica, *Boisd.*
44. Alæna nyassæ, var., *Hewits.*
45. Polyommatus bæticus, *Linn.*
46. Catochrysops osiris, *Hopff.*
47. Azanus occidentalis, *Butler.*
48. Tarucus plinius, *Fabr.*
49. Nacaduba sichela, *Wallgr.*
50. Castalius calice, *Hopff.*
51. Lycænesthes liodes, *Hewits.*
52. Zizera knysna, *Trimen.*
53. —— lucida, *Trimen.*
54. Lachnocnema bibulus, *Fabr.*
55. Spindasis nyassæ, *Butler.*
56. Virachola anta, *Trimen.*
57. Iolaus buxtoni, *Hewits.*
58. —— cæculus, *Hopff.*
59. Myrina ficedula ♀, *Trimen.*
60. Mylothris agathina, *Cramer.*
*61. —— yulei, *Butler.*
62. Terias zoe, *Hopff.*
63. —— regularis, *Butl.*
64. —— leonis, *Butl.*
65. —— orientis, *Butl.*
66. Teracolus opalescens, *Butl.*, and dry-season males.
67. —— hildebrandtii ♂, *Staud.*
68. —— subfasciatus, *Swainson*, dry-season female.
69. —— anax, *Grose Smith.*
70. —— sipylus ♂, *Swinhoe.*
71. —— omphale, *Godart.*
72. —— emini, *Butler*, dry- and wet-season forms, ♂♂.
73. Catopsilia florella, *Fabr.* Three named varieties.
74. Belenois thysa, *Hopff.*
75. —— calypso, *Drury.*
76. —— crawshayi ♂, *Butl.*, and dry-season form *diminuta* ♂.
77. —— mesentina, *Cram.*
78. —— severina ♂, *Cram.*
*79. Phrissura nyasana, *Butler.*
80. Herpænia eriphia, *Godt.*
81. Papilio policenes, *Cram.*
82. —— lurlinus, *Butler.*
83. —— porthaon, *Hewits.*
84. —— pylades, *Fabr.*
85. —— nivinox, *Butler.*
86. —— similis, *Cramer.*
87. —— demoleus, *Linn.*
88. Osmodes ranoha, *Westw.*
89. Cyclopides willemi, *Wallgr.*

Heterocera.

90. Chærocampa osiris, *Dalm.*
91. Daphnis nerii, *Linn.*
92. Nephele accentifera, *Beauv.*
*93. Antiphella atrinotata, *Butler.*
94. Deiopeia pulchella, *Linn.*
95. Argina leonina, *Walk.*
96. Egybolia vaillantina, *Stoll.*
97. Hibrildes norax, *Druce.*
*98. Phægorista zebra, *Butler.*
99. Acontia graellsii, *Feisth.*
100. Cyligramma latona, *Cramer.*
101. —— rudilinea, *Walk.*
*102. Fodina johnstoni, *Butler.*
103. Glyphodes sinuata, *Fabr.*
104. Gonodela zombina, *Butler.*
105. Comibæna? sp. (much rubbed; possibly *Thalassodes scissaria*, Feld.).

In this list the new forms are indicated by an asterisk; these I now proceed to describe:—

Physcænura pione, var. lucida. (Plate XLIII. fig. 1.)

Differs from typical *P. pione*, of which we have a good series, in the larger white area on the upper surface of the primaries, the black internal streak being abbreviated or even sometimes almost obliterated, so that the lobe extending from the white area towards inner margin is of at least double the width: on the under surface the black striæ are wider apart, far less numerous, and the yellow ocelli are paler; the three black lines on outer border are not equidistant as in typical *P. pione*, the two inner ones being nearer together. Expanse of wings, ♂ 39 millim., ♀ 45.

Two males and one female.

It is possible that this form may prove constant to locality: it is probably from near Fort Songwe, N.W. Nyasa. We have received typical *P. pione* only from Zomba and Deep Bay.

Mylothris yulei, sp. n. (Plate XLIII. fig. 2.)

♂. Above milky white, slightly tinted with primrose-yellow at the base; apical border, a very slender marginal line, and a dot at extremity of second median branch black; costal border towards base irrorated with blackish; secondaries with black marginal dots at extremities of median branches and submedian vein: primaries below golden orange (or cadmium-yellow) to middle of cell; apical area washed diffusedly with saffron-yellowish; seven marginal black dots, the last, at extremity of first median branch, very small: secondaries creamy buff, yellower at base, the costal areolet cadmium-yellow; six black marginal spots, the smallest being the fifth from anal angle or that at extremity of radial nervure: body normal. Expanse of wings 51 millim.

The female, which I formerly supposed to be a pale variety of *M. rueppellii*, differs chiefly on the upper surface in the pale saffron flush at the base of the primaries and the still paler tint at base of secondaries: on the under surface it agrees very nearly with the male. Expanse of wings 59 millim.

The female example in the Museum is from Kilima-njaro.

Phrissura nyasana, sp. n. (Plate XLIII. fig. 3.)

An exact copy of *Mylothris rueppellii*: differing chiefly in its broader wings, the presence of the apical subcostal bifurcation, and in the form and greater intensity of the apical marginal black spots: wings above milk-white; primaries with the basal third bright cadmium-yellow bordered with gamboge; costal border irrorated with black; apical border narrowly pearl-grey, the apical furca and a series of triangular spots terminating the nervures intense black: secondaries faintly tinted with yellow at the base; a marginal series of eight intensely black spots: body normal. Primaries below white, with extreme costal margin and dots at extremities of nervures black; base almost to end of cell brilliant orange edged with yellow; apical border creamy buff: secondaries creamy buff, palest over end of cell, base suffused with orange, the costal areole brilliant orange, external border washed with deep buff; black spots as above: body whitish. Expanse of wings 64 millim.

Two males.

The following Heterocera are new:--

LIPARIDÆ.

ANTIPHELLA ATRINOTATA, sp. n. (Plate XLIII. fig. 5.)

Pearl-white, wings semitransparent; primaries with three subapical spots in a slightly curved series parallel to outer margin and two spots placed obliquely near external angle, all blackish and very small; costal margin also black, very distinctly so at basal third: antennæ pale testaceous; body of similar colouring, but densely irrorated, rather than clothed, with white scales: under surface as above. Expanse of wings 34 millim.

One male.

NYCTEMERIDÆ.

PHÆGORISTA ZEBRA, sp. n. (Plate XLIII. fig. 4.)

♂. Like *P. similis*, Walk. (= *helcitoides*, Dewitz), but the subapical patch on the black area of primaries broad and almost wholly ochreous as in *P. formosa*, the spot towards external angle also ochreous; secondaries orange-vermilion, with the usual black border and white-chequered fringe: body as in *P. similis*. Expanse of wings 71 millim.

One male.

NOCTUIDÆ.

FODINA JOHNSTONI, sp. n. (Plate XLIII. fig. 6.)

Close to *F. albicincta*, but with the primaries more closely resembling those of *F. postmaculata* in pattern, the wing being crossed as in that species by an oblique buff band ending at external angle in a greyish lobe; outer margin also buff; fringe greyish. Expanse of wings 17 millim.

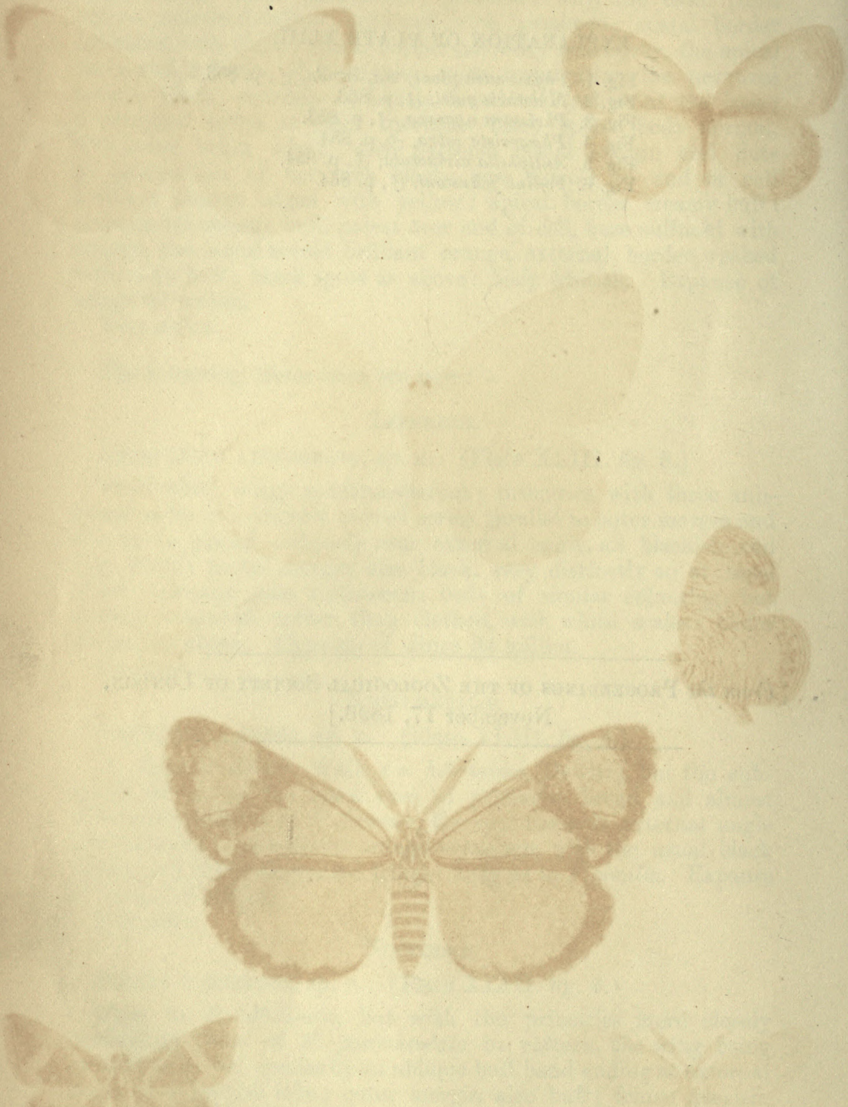
One rather poor example.

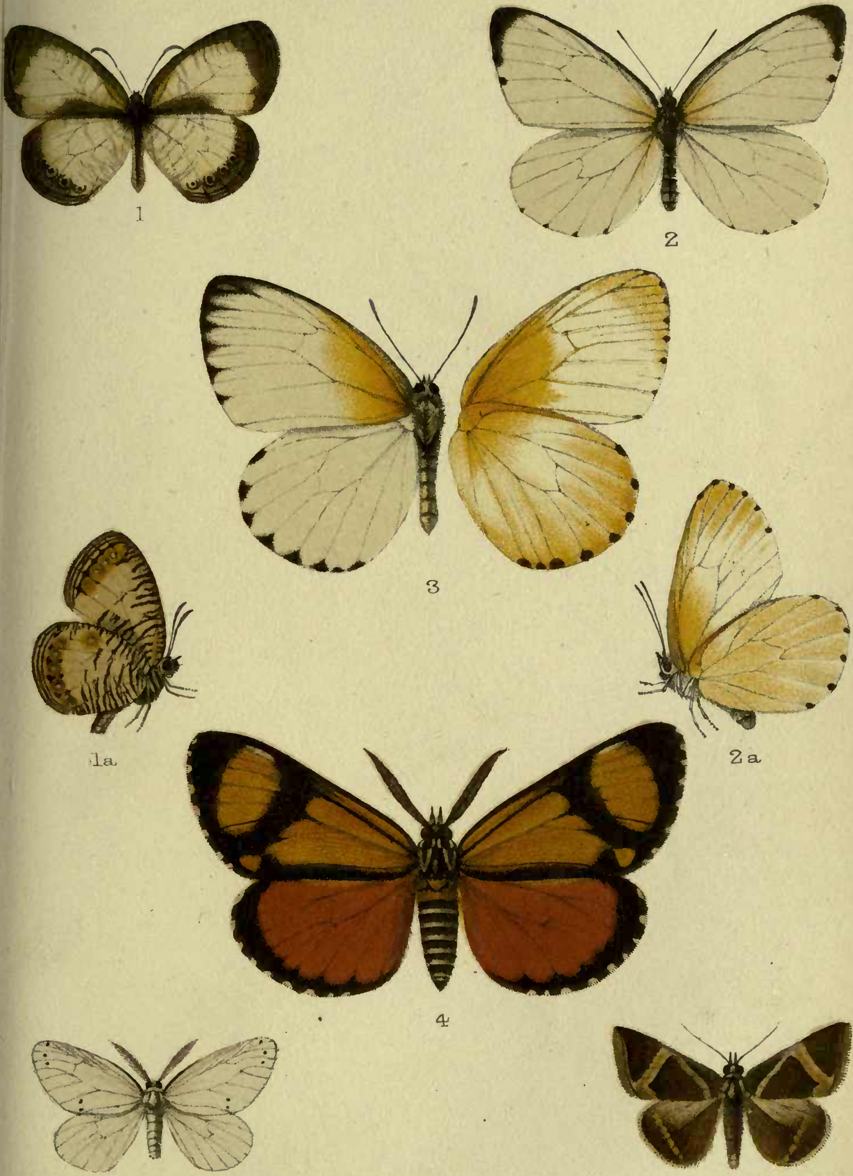
This is doubtless the African representative of the Ceylonese *F. postmaculata*, from which the more buff-tinted markings of the primaries and smoky-brown secondaries with oblique ochreous subanal line to outer margin readily distinguish it.

EXPLANATION OF PLATE XLIII.

Fig. 1. *Physcænura pione*, var. *lucida*, ♂, p. 853.
Fig. 2. *Mylothris yulei*, ♂, p. 853.
Fig. 3. *Phrissura nyasana*, ♂, p. 853.
Fig. 4. *Phægorista zebra*, ♂, p. 854.
Fig. 5. *Antiphella atrinotata*, ♂, p. 854.
Fig. 6. *Fodina johnstoni*, ♂, p. 854.

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON,
November 17, 1896.]





F.C. Knight del. et lith.

West, Newman chromo.

New Lepidoptera from Nyasa-land.

Collected by Mr Yule.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xviii., *December* 1896.

A new Butterfly of the Genus Acræa *from Tugela, S. Africa.*

By A. G. BUTLER, Ph.D. &c.

MR. G. H. BURN, of Tugela, Natal, South Africa, writes under date of September 16th as follows:—"I am to-day forwarding for your inspection two specimens of an *Acræa* which I have taken here, and which I believe is new to science. This butterfly I first took on September 5th, 1894, and I sent two or three specimens to Mr. R. Trimen, then Curator of the Cape Museum. In his letter acknowledging receipt Mr. Trimen says that the *Acræa* is new to science, and asks me to try and obtain the paired sexes, as the females (or those specimens which had the appearance of females) did not exhibit the ordinary distinguishing characters of females of the genus *Acræa*. I send you what I believe to be a male and a female. Since 1894 I only got twelve or thirteen specimens until this month."

The examples forwarded are undoubtedly a pair. In colouring they do not differ, excepting that the male is slightly brighter in tint; but the male is considerably smaller than the female, the discrepancy in size being greater than in the allied species. It may, however, vary in this respect.

Acræa Burni, sp. n.

Intermediate between *A. machequena* and *A. obeira*, the pattern being identical with that of the latter species, but the basal half of the primaries and entire ground-colour of the secondaries is ochreous buff; the spots on the secondaries are smaller than in *A. obeira*, and the orange spots upon the dusky outer border are less deep in colour.

Expanse of wings, ♂ 38, ♀ 60 millim.

Tugela, Natal, South Africa (*G. H. Burn*).

From *A. machequena* this species is easily distinguished by the arrangement of the spots on the secondaries, which, in that butterfly, has the character of that of *A. ranavalona*.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xix., *January* 1897.

On the Sexes of Charaxes mixtus, *Rothschild.*

By A. G. BUTLER, Ph.D. &c.

In my late revision of the genus *Charaxes* (Journ. Linn. Soc., Zool. vol. xxv. p. 377) I placed *C. mixtus*, Roths., as a variety of *C. tiridates*, remarking:—"There can be no doubt, I think, that the prominence of the white centres to the blue spots, unless proved to be peculiar to one locality only, can hardly indicate even a distinct race. Mr. Rothschild insists that the true female of *C. mixtus* resembles the male!"

Recently Mr. Rothschild brought the type of his female *C. mixtus* to the Museum, but, unhappily, I was away ill. Mr. Heron, however, made a careful coloured drawing of it, which, on my return, he showed me. Directly I looked at it I was convinced, by the form of the wings alone, that it was a female, though with the colouring of a male![*] Mr. Rothschild was therefore quite correct as to the sex of his type of *C. mixtus* ♀. Whether the latter is more than a dimorphic form of *C. tiridates* can only be satisfactorily decided by those who have an opportunity of studying it in life and breeding it; but there are several other species of *Charaxes* which have two well-defined forms of females, whilst the males differ in much the same way as those of *C. mixtus* and *C. tiridates*[†]. I hardly think *C. mixtus* can be a seasonal form, on account of its great rarity, whilst *C. tiridates* is one of the most abundant of the blue *Charaxes* of West Africa; but I think it may be a rare dimorphic form of *C. tiridates* ♀. The differences in the male alone would not strike anybody as of great importance—they are less than one notes between the acknowledged varieties of many species; nevertheless, if they should be proved to be constant, I would be the last to refuse to recognize their importance, for I am well aware that characters which in one group of butterflies are valueless are quite constant and reliable in another.

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[*] An extremely surprising thing in this group, where the female differences are usually very pronounced.

[†] *C. Hollandii* and *C. Dewitzi.*

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xix., *April* 1897.

On a new Nymphalid Butterfly from N.E. Borneo. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., Senior Assistant-Keeper, Zoological Department, British Museum.

THE following species was collected and recently presented to the Museum by W. B. Pryer, Esq., of Sandakan. It is allied to *Zeuxidia amethystus* and *Z. victrix,* but differs considerably in the scaling and tufting of the secondaries. As a new genus is certain to be founded sooner or later for this section of *Zeuxidia*, I may as well name it at once :—

ZEUXALTIS, subgenus novum.

Outline and neuration of *Zeuxidia*, but the secondaries thinly scaled and semitransparent, with the exception of a broad border encircling the wing and an arched series of six broad internervular elongated patches crossing the outer portion of the basal half from the costal vein across the discoidal cell to the submedian vein; the first three of these patches are much thickened and covered by broad flattened tufts of long hair.

Zeuxidia (*Zeuxaltis*) *Pryeri*, sp. n.

Primaries above nearly as in *Z. victrix*, but the apical area much wider between the blue arched belt and the outer margin, especially towards costa: the secondaries considerably paler owing to the thin scaling on these wings excepting in the borders and glandular patches; the first three of these pale in colouring, but almost concealed by blackish tufts of hair, the remaining three much more elongated and deep pitchy brown, the last (upon interno-median area) very much elongated; the costal, outer, and inner borders pitchy brown, the basal half of the submedian vein bearing a fringe of long hair; a very well-defined wavy blue submarginal band, partly concealing the brown outer border and emitting an oval elongated spot inwards upon the first median areole. The under surface resembles that of the allied species, which this insect corresponds with in expanse of wings.

♂. Sandakan, N.E. Borneo. Type coll. B. M.

The narrow wavy submarginal band of the secondaries and the different arrangement of tufts on the secondaries, as well as the curiously diaphanous character of these wings, due to the somewhat different structure of the scales, readily distinguish it from all the known forms of *Zeuxidia*, *Amathusia*, *Amathuxidia*, &c.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xix., *June* 1897.

On a new African Pierine Butterfly of the Genus Mylothris.

By ARTHUR G. BUTLER, Ph.D. &c.

THE following species was received among the Old-World Pierinæ of the Godman and Salvin collection:—

Mylothris primulina, sp. n.

Intermediate in character between *M. asphodelus* and *M. sulphurea* from the Cameroons.

♂. Above milk-white, the costa and the basal area of primaries to end of cell bright cowslip-yellow, changing at base and on the basal half of costa to bright cadmium-yellow; a smoky black apical patch, rather broader than in *M. sulphurea*, a large spot almost confluent with the latter at end of second median branch, and a dot at end of first median branch also black: secondaries bright cowslip-yellow at base, six small black marginal spots. Body above greenish grey; abdomen creamy white at the sides. Primaries below with the cadmium-yellow at the base more extended and the apical third of the wing traversed by greenish-yellow internervular streaks; apical patch only visible through the wing, but seven black marginal spots: secondaries with the yellow at base slightly more extended and the base of costa cadmium-yellow, the outer border faintly tinted with primrose-yellow, the black marginal spots rather larger than above. Body below creamy white, the pectus with a feeble tint of primrose.

Expanse of wings 58 millim.

Ondo country, Lagos (*Sir G. Carter*). From Godman and Salvin coll.

We have two males of this very pretty species.

From the Annals and Magazine of Natural History,
Ser. 6. Vol. xx., *August* 1897.

Revision of the Pierine Butterflies of the Genus Delias.

By A. G. Butler, Ph.D. &c., Senior Assistant-Keeper, Zoological Department, British Museum.

As recently as 1893 Ritter von Mitis essayed a revision of this genus in the German 'Iris,' pp. 100–153; he, however, overlooked two or three described forms, and his material evidently was far from rich enough to enable him to form a just estimate as to the value of the characters upon which species had been based.

At the present time the collection of the Natural History Museum, though still far from perfect, possesses long series of the commoner species, and is chiefly weak in those of the Solomon Islands which have been described during the last few years. The generosity of Messrs. Godman and Salvin, whose collection of these butterflies is now incorporated with the National series, has filled up several blanks and greatly improved the representation of some of the more beautiful and rarer species. Therefore, as I have been asked to bring the account of this genus up to date while fresh from its study, I will try to do my best, reducing the synonymy as much as possible.

1. *Delias eucharis.*

Papilio eucharis, Drury, Ill. Exot. Ent. ii. pl. x. figs. 5, 6 (1773).
Pieris epicharis, Godart, Enc. Méth. ix. p. 153 (1819).

Fifty-two examples, of which twenty-four are from the Godman and Salvin collection. Seven other examples are in the Hewitson series. India and Burma generally. B. M.

This widely distributed and common species seems to vary very little.

2. *Delias ethira.*

Delias ethira, Doherty, Journ. Asiat. Soc. Beng. iv. p. 262 (1886).

Berhampore, Ganjam and Khasia Hills (nine examples). B. M.

Although most nearly related to *D. hierte*, this species may be regarded as tending to link the latter to *D. eucharis*.

3. *Delias hierte.*

Delias hierte, Hübner, Zutr. exot. Schmett. figs. 77, 78 (1818).
Var. *Thyca indica*, Wallace, Trans. Ent. Soc. Lond. 3rd ser. vol. iv. p. 351 (1867).
Aberr. ♀. *Thyca devaca*, Moore, P. Z. S. 1872, p. 566.

Forty-three specimens, of which twenty-one are from G. & S. coll.; also five in coll. Hewitson. India, Burma, and Siam. B. M.

This species is very variable on both surfaces, but especially on the under surface of the secondaries; the scarlet submarginal spots are always large and seven in number, but they are very well developed in some examples; the yellow colouring on these wings also varies from lemon to saffron, sometimes even tinged with scarlet on the abdominal border, whilst Moore's *T. sanaca* (a full-coloured female) has the subcostal area and cell of secondaries red; this, however, I believe to be a mere accidental discoloration, such as one sometimes sees in Pierine butterflies, and due perhaps to staining through the chance dropping of meconium from above as the insect rested below a twig; but at best a mere aberration. In some examples, especially where the yellow is deep in tint, it is confined to the inner half of the wing and partly divided from the scarlet submarginal spots by white crescents; in others these crescents are wanting; frequently the yellow covers nearly the whole of the paler portion of the wing, and (rarely) it entirely obliterates every vestige of white. In the sport to which Wallace gave the name of *Thyca indica* the black suffusion on the upper surface at apex of primaries is weakly defined and the black veins on the under surface of the secondaries are expanded by a bordering of black scales at the inner edge of the scarlet spots. None of these varieties are limited to any locality, excepting, perhaps, the variety without white on the underside of the secondaries, of which we only possess a female from Toungoo; a male from Rangoon has almost lost all trace of white, so that it is just possible that this variety may be confined to Burma.

4. *Delias metarete.*

Delias metarete, Butler, Trans. Linn. Soc. (2) i. p. 550 (1879).

Malacca, Penang, Borneo, Sumatra. B. M. Sumatra, coll. Hewitson.

This is a Malayan representative of *D. hierte*, approaching nearest to the var. *indica*, but the much more uniformly grey apical area of the primaries above, the more restricted and sharply defined limitation of the yellow area on the under surface of the secondaries, and development of the black inner bordering of the scarlet spots constantly distinguish it. Our series consists of eight examples, two of which are from the Godman and Salvin collection, also one in the Hewitson collection.

5. *Delias hæmorrhæa.*

Pieris hæmorrhæa, Vollenhoven, Mon. Pier. p. 10, pl. ii. fig. 5 (1865).

Three examples, Banca. ♂ ♀, B. M.

The more dusky bordering of the secondaries above, the orange instead of yellow colouring below, and restriction of the scarlet spots to three in number, readily separate this insular form from the preceding.

6. *Delias niasana.*

Delias niasana, Kheil, Rhop. Nias. p. 35, pl. iv. figs. 22, 23 (1884).
Var. *amarilla*, ibid. *t. c.*

Nias. Three examples. B. M.

Two of the specimens are from the Godman and Salvin collection. The species is a well-marked one, having the yellow on the under surface of the secondaries of a bright primrose tint, the submarginal scarlet spots almost enclosed in black and with pale edges; it approaches more nearly to *D. hyparete*, but is quite easily separated from that species by the form, pale edging, and number of the scarlet spots.

7. *Delias hyparete.*

Papilio hyparete, Linnæus, Mus. Lud. Ulr. p. 247 (1764).
Papilio autonoe, Cramer, Pap. Exot. ii. pl. clxxxvii. C, D (1779).

Assam, Penang, Borneo, Sumatra, and Java. B. M.

Thirty-four examples, of which thirteen are from the Godman and Salvin collection. The species varies chiefly in the size of the submarginal scarlet spots on under surface of secondaries, but not to any great extent.

8. *Delias luzonensis.*

Pieris luzonensis, Felder, Wien. ent. Monatschr. vi. p. 285 (1862).
Var. *Delias palawanica*, Staudinger, Iris, ii. p. 24 (1889).
Vars. *Delias mindanaensis*, Mitis, Iris, vi. p. 139, pl. ii. figs. 4, 5 (1893).

Philippine Islands and Formosa. B. M.

Eighteen examples, of which twelve were received from the Godman and Salvin collection. Hewitson also had four other specimens.

In its typical form *D. luzonensis* nearly resembles the darker examples of *D. hyparete* from Java (*D. autonoe*), but is at once seen to differ in the greater obliquity of the inner edge of the blackish apical patch, owing to its being carried backwards to the end of the discoidal cell; also (on the under surface) in the broader black border of secondaries, which completely encloses the scarlet submarginal spots, and the much greater extent of yellow on these wings. The species is very variable, easily divided into five forms, as follows:—

1. Typical form, with blackish apical patch to primaries streaked above with grey between the veins; secondaries below with six scarlet spots.—Luzon, Manilla, and Formosa.
2. Secondaries below with the second and third spots

whitish and small (female figured by von Mitis, Taf. ii. fig. 5, as *D. mindanaensis* ♀).—Luzon.

3. Secondaries with fewer scarlet spots—two to three in male, three large and two very small in female (male *D. mindanaensis*, fig. 4).—Mindanao.

4. Apex of primaries above crossed by more or less confluent broad white streaks, forming a belt crossed by black veins; secondaries below with six scarlet spots.—*D. palawanica*, Palawan.

5. Secondaries below with second and third spots small and whitish.—Mindoro.

That any of these forms is constant to locality may be doubted.

9. *Delias lucina.*

Delias lucina, Distant, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 270 (1887).
Delias joloana, Staudinger, Iris, ii. p. 24 (1889).

Sulu Archipelago. Two males from G. & S. coll.

10. *Delias simplex*, sp. n.

♂. Upperside resembling *D. Stollii* (*autonoe*, Stoll, not Cramer), but even less varied with black: wings below white, with black veins slightly expanded on the outer border of the primaries, and so much so on the secondaries as to form a continuous narrow sinuated border; internal third of secondaries pale chrome-yellow; *no red submarginal spots.*

Expanse of wings 82 millim.

Sumatra (*Sachs*). From G. & S. coll.

11. *Delias Stollii.*

Delias Stollii, Butler, P. Z. S. 1872, p. 32.
Papilio autonoe, Stoll (not Cramer), Pap. Exot. pl. xxxiii. figs. 2, 2 *b* (1790).

China. B. M.

Six examples, of which two were in the Godman and Salvin collection; the species is easily recognizable by the secondaries on the under surface being almost wholly yellow, combined with very small scarlet submarginal spots, bordered externally by a yellow edging, which separates them from the black of the outer border.

12. *Delias Rosenbergii.*

Pieris Rosenbergii, Vollenhoven, Mon. Pier. p. 11, pl. ii. fig. 6 (1865).
Delias chrysoleuca, Mitis, Iris, vi. p. 138 (1893).

Macassar. Three specimens. B. M.

One example from the Godman and Salvin collection.

Var. *Delias Lorquinii.*

Var. *Delias Lorquinii,* Felder, Reise der Nov., Lep. p. 159, pl. xxiv. figs. 9, 10 (1865).
Delias catamelas, Staudinger, Iris, iv. p. 77 (1891).

Menado. Four examples. B. M.

Also four specimens in Hewitson's collection.

Three of the examples of this variety or local race are from the Godman and Salvin collection; it chiefly differs from typical *D. Rosenbergii* in the black suffusion towards base of secondaries on the under surface, and was figured by Vollenhoven (pl. iii. fig. 1) as the female of that species; and he mentions both as coming from Macassar. The following may be a further development of the same species, the colour of the secondaries being variable.

13. *Delias Mitisi.*

Delias Mitisi, Staudinger, Iris, vii. p. 352 (1894).

Sula Islands.

Differs in having the basal half of secondaries below black, without yellow basal patch; the discal area white, only tinted with yellow at inner margin; submarginal scarlet spots larger.

14. *Delias melusina.*

Delias melusina, Staudinger, Iris, iv. p. 76 (1891), iii. pl. iii. fig. 5.

Celebes.

Seems nearly allied to *D. zebuda,* but with very melanic upper surface and yellow subapical spots on under surface of primaries.

15. *Delias zebuda.*

Pieris zebuda, Hewitson, Exot. Butt. iii. *Pier.* pl. vii. figs. 49, 50 (1862).

Menado and Ternate. Six examples. B. M.

Four of the specimens from the Godman and Salvin collection. In the Hewitson collection there are four more specimens from Menado and Tondano.

16. *Delias Descombesi.*

Pieris Descombesi, Boisduval, Sp. Gén. Lép. i. p. 465 (1836).

Darjiling, Nepal, Assam, Silhet, Moulmein, Toungoo, Tilin Yaw, Poungudaw, Pegu. B. M.

Twenty-eight examples, thirteen of which are from the Godman and Salvin collection. This species varies very little, excepting in the ground-colour of the secondaries below, which, in the females, varies from buffish yellow to whitish. Five examples in the Hewitson collection.

17. *Delias oraia.*

Delias oraia, Doherty, Journ. As. Soc. Beng. lx. p. 189 (1891); Grose Smith & Kirby, Rhop. Exot. ii. p. 10, *Del.* pl. iii. figs. 5, 6 (1893).

Sumbawa Island (ex coll. G. & S.). ♂ ♀, B. M.

A well-marked local representative of *D. Descombesi*, the female being very distinct in character.

18. *Delias splendida.*

Delias splendida, Rothschild, Novit. Zool. i. p. 661 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 4–6 (1895).

Timor.

A very fine and distinct species of the *D. Descombesi* group.

19. *Delias belisama.*

Papilio belisama, Cramer, Pap. Exot. iii. pl. cclviii. A, B (1782).
Var. *Delias nakula,* Grose Smith & Kirby, Rhop. Exot. Pier. i., *Del.* pl. i. figs. 1–4 (1889).
Var. *Delias aurantia,* Doherty, Journ. As. Soc. Beng. lx. p. 189 (1891).
Delias belisar, Staudinger, Iris, iv. p. 78 (1891); Grose Smith & Kirby, Rhop. Exot. ii. p. 6, *Del.* pl. ii. figs. 6, 7 (1893).
Var. *Delias vestalina,* Staudinger (=*nakula*), Iris, iv. p. 79 (1891).
Var. *Delias erubescens,* Staudinger, *t. c.* p. 80.

Java. Twenty-six specimens. B. M.

Six examples are in the Hewitson collection. Eight of the specimens in the general series are from the Godman and Salvin collection.

Attempts have been made to show that the variations of this species are localized, but it is certain that Dr. Horsfield bred the typical form, *D. nakula* and *D. aurantia*, and there is no reason for supposing that he collected his larvæ in different parts of the island. *D. belisar* has been regarded as a variety identical with *D. aurantia*; it, however, differs in the greater width of the outer border of the secondaries in the male; the female does not differ: it is said to occur at Malang, and may possibly be a localized sport of the species. *D. erubescens* is probably a rare aberration; we have a small female of a very deep rosy orange colour (formerly in the Kaden collection). Intergrades occur between typical *D. belisama* and *D. aurantia*.

20. *Delias glauce.*

♂. *Pieris glauce*, Butler, P. Z. S. 1865, p. 431, pl. xxv. fig. 2.

Borneo. Type, B. M.

This species chiefly differs from the preceding in the absence of the subapical yellow markings from the under surface of the primaries. It is said to be common in Sumatra.

21. *Delias inferna.*

Delias inferna, Butler, Lep. Exot. p. 63, pl. xxiv. fig. 6 (1871); Grose Smith & Kirby, Rhop. Exot., *Del.* pl. ii. figs. 3–6.

Type N.W. Australia; two males and two females, Cape York and Port Moresby. B. M.

Twelve examples, of which ten are from the Godman and Salvin collection. Hewitson also possessed a pair which he mixed up with *D. aruna.*

22. *Delias aruna.*

♂. *Pieris aruna*, Boisduval, Voy. de l'Astr., Lép. p. 48 (1832); Hewitson, Exot. Butt. ii., *Pier.* pl. iii. figs. 20–22 (1861).
♀. *Pieris bajura*, Boisduval, *l. c.*

Two males and one female, Humboldt Bay; male, Batchian; male, Waigiou. B. M.

From the Godman and Salvin collection; there are also two males and a female in the Hewitson collection from Batchian and Waigiou.

23. *Delias Honrathi.*

♀. *Delias Honrathi*, Mitis, Iris, vi. p. 134, pl. iii. fig. 1 (1893).

Ralum, New Pomerania.

This may turn out to be only a dimorphic form of the female of *D. madetes*, from which it principally differs in the white instead of yellow ground-colour of the upper surface and in having most of the spots on the under surface of the primaries white.

24. *Delias madetes.*

Pieris madetes, Godman & Salvin, P. Z. S. 1878, p. 733.

Male and female, types (coll. G. & S.); male and female, New Ireland. B. M.

25. *Delias diaphana.*

Delias diaphana, Semper, Verh. Hamb. iii. p. 114 (1878); Reis. Phil. v. p 228, pl. xxxiv. figs. 3–6 (1890).

Mindanao and Davao. B. M.

Fourteen examples, of which twelve are from the Godman and Salvin collection.

The three following species stand out distinct from all the other forms of the genus, but combine characters of those which precede and those which follow them in this arrangement of the genus.

26. *Delias aganippe.*

Papilio aganippe, Donovan, Ins. New Holland, pl. xxix. (1805).

Adelaide, Sydney, Moreton Bay, &c. B. M.

Thirteen examples, of which seven are from the Godman and Salvin collection. Four other specimens in the Hewitson series.

27. *Delias harpalyce.*

Papilio harpalyce, Donovan, Ins. New Holland, pl. xviii. fig. 1 (1805).
Papilio Lewini, Thon, Entom. Arch. i. p. 38, pl. iii. fig. 10 (1828).

Australia, Sydney. B. M.

Nine examples, three of which are from the Godman and Salvin collection. Also three specimens in the Hewitson eries.

28. *Delias nigrina.*

Papilio nigrina, Fabricius, Syst. Ent. p. 475 (1775); Donovan, Ins. New Holl. pl. xix. fig. 1 (1805).

Sydney, Moreton Bay, Richmond River. B. M.

Ten specimens, four of which are from the Godman and Salvin collection. Four other specimens in Hewitson's collection.

29. *Delias funerea.*

Delias funerea, Rothschild, Novit. Zool. i. p. 662 (1894).
Delias Plateni, Staudinger, Iris, vii. p. 355 (1894).

Gilolo.

In some respects this species resembles *D. timorensis,* but it is more nearly related to *D. duris,* from which it differs in the white under surface of primaries, with whitish subapical spots on a black area; the secondaries below are also quite black, with the scarlet markings more vivid than in *D. duris.*

30. *Delias duris.*

Pieris duris, Hewitson, Exot. Butt. ii., *Pier.* pl. v. fig. 34 (1861).

Ceram. Type coll. Hewitson.

Intermediate between the preceding species and *D. cæneus.*

31. *Delias cœneus.*

Papilio cœneus, Linnæus, Mus. Lud. Ulr. p. 271 (1764).
Papilio plexaris, Donovan, Ins. New Holland, pl. xviii. fig. 2 (1805).
Cathæmia anthyparete, Hübner, Verz. bek. Schmett. p. 92 (1816).
Pieris philyra, Godart, Enc. Méth. ix. p. 150 (1819).

Amboina, Ceram. B. M.

Nineteen examples, of which nine are from the Godman and Salvin collection.

32. *Delias philotis.*

Thyca philotis, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 357, pl. viii. fig. 4 (1867).

Bourou. Types coll. Hewitson.

Hewitson united this species to *D. cœneus*, from which it may be readily distinguished by the oblique inner edge of the blackish area of primaries on the underside, leaving a large white patch from median vein to inner margin.

33. *Delias argenthona.*

Papilio argenthona, Fabricius, Ent. Syst. iii. 1, p. 200 (1793).
♀. *Pieris protocharis*, Boisduval, Sp. Gén. Lép. i. p. 457 (1836).

Queensland, Port Denison, Richmond River, Moreton Bay. B. M.

Fourteen examples, eight of which are from the Godman and Salvin collection. The Hewitson collection contains six specimens.

The specimen figured by me as *Delias fragalactea* (Lep. Exot. pl. xxiv. fig. 7) is only a small example of this species; the white spot at end of discoidal cell in primaries on the under surface is frequently confluent with the white of the ground-colour in this species, and therefore cannot be regarded as one of the distinguishing characters of *D. fragalactea.*

34. *Delias fragalactea.*

Thyca fragalactea, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 243 (1869), but not of Lep. Exot.

N. Australia. Two examples. Type B. M.

It is possible that this may eventually be linked to *D. argenthona*; but the greater depth of the pale basal area on the under surface of the secondaries, which encloses the red spot and extends to the end of the cell, as also the heavier black bordering of these wings on the upper surface, readily distinguish it at present from that species. Apparently the hind wings are comparatively longer than in *D. argenthona*, there being little, if any, difference in the width of the black area preceding the scarlet spots; but this is due to the latter being less elongated than usual.

35. *Delias peribœa.*

Pieris peribœa, Godart, Enc. Méth. ix. p. 154 (1819).
Delias Wallacei, Rothschild, Iris, v. p. 441, pl. v. fig. 2 (1892).

Three female examples. Java, from Godman and Salvin collection.

The absence of the scarlet spot at the end of the cell, upon which Mr. Rothschild relied, proves to be an unstable character; indeed, it is not really scarlet, but orange in the female, and in one of our specimens it is indistinct.

36. *Delias Schönbergi.*

Delias Schönbergi, Rothschild, Novit. Zool. ii. p. 161, pl. viii. figs. 6, 7 (1895).

Bougainville Island, Solomon group.

This is one of the handsomest species of the *D. argenthona* group.

37. *Delias sambawana.*

Delias sambawana, Rothschild, Novit. Zool. i. p. 662 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 2, 3 (1895).

Sambawa Island. Three specimens, from the Godman and Salvin collection.

38. *Delias fasciata.*

Delias fasciata, Rothschild, Novit. Zool. i. p. 662 (1894); ♀, Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. fig. 1 (1895).

Sumba.

The submarginal spots on the under surface are yellow splashed with red.

39. *Delias sthenobœa.*

Pieris sthenobœa, Boisduval, Sp. Gén. Lép. i. p. 466 (1836).

Moluccas.

Said to resemble *D. Descombesii*, but with the wings paler and no red patch at base of secondaries on the under surface; the submarginal spots are yellow.

40. *Delias Dohertyi.*

Delias Dohertyi, Rothschild, Novit. Zool. i. p. 661 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 7, 8 (1895).

Timor.

It is a curious thing that in the same year when the above was described M. Oberthür described a *Pieris Dohertyi* from New Guinea. The latter, however, appears to me to be allied to *P. ornytion* of Godman and Salvin, in which case it is not a *Delias* (although *P. ornytion* has erroneously been referred to this genus by von Mitis).

41. *Delias bagoe.*

Pieris bagoe, Boisduval, Voy. de l'Astr., Lép. p. 49 (1832).
Pieris eurygania, Godman & Salvin, P. Z. S. 1878, p. 734.

New Ireland. Seven examples. B. M.

Five of the specimens, including the types of *P. eurygania*, are from the Godman and Salvin collection.

42. *Delias Salvini.*

Delias Salvini, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ix. p. 153 (1882).

New Britain. Type, B. M.

43. *Delias echo.*

Thyca echo, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 358, pl. viii. fig. 3 (1867).

Bourou. Types, coll. Hewitson.

Allied to the following, but very distinct.

44. *Delias isse.*

Papilio isse, Cramer, Pap. Exot. i. pl. lv. E, F (1779).

Amboina and Ceram. Sixteen examples. B. M.

Ten of the specimens are from the Godman and Salvin collection. The Hewitson series consists of four specimens.

45. *Delias Ribbei.*

Delias Ribbei, Röber, Iris, i. p. 46, pl. ii. figs. 3, 4 (1886).

Aru Islands.

Also allied to *D. isse.*

46. *Delias candida.*

♂. *Pieris candida*, Vollenhoven, Mon. Pier. p. 11, pl. iii. fig. 2 (1865).
♀. *Pieris herodias*, Vollenhoven, *l. c.*

Batchian, four specimens from Godman and Salvin collection.

47. *Delias chrysomelæna.*

Pieris chrysomelæna, Vollenhoven, Tijd. Ent. ser. 2, vol. i. p. 57, pl. i. figs. 1, 2 (1866).

Batchian, three specimens from Godman and Salvin collection.

The female above resembles that of *D. candida*.

48. *Delias echidna.*

Pieris echidna, Hewitson, Exot. Butt. ii., *Pier.* pl. v. figs. 35, 36 (1861).

Ceram. Type, coll. Hewitson.

49. *Delias dorylæa.*

♀. *Pieris dorylæa*, Felder, Reise der Nov., Lep. ii. p. 182 (1865); ? Mitis, Iris, vi. pl. iii. fig. 2.

♂. *Thyca hippodamia*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 359, pl. viii. fig. 1 (1867).

Aru. ♂, Wallace's type, coll. Hewitson.

50. *Delias dorimene.*

Papilio dorimene, Cramer, Pap. Exot. iv. pl. ccclxxxvii. C, D (1782).

Papilio fuliginosus, Gmelin, Syst. Nat. i. 5, p. 2261 (1788–91).

Pieris ageleis, Godart, Enc. Méth. ix. p. 147 (1819).

Amboina and Ceram. Fourteen examples. B. M.

Eight of the specimens are from the Godman and Salvin collection; there are also four others in the Hewitson collection.

51. *Delias altivaga.*

Delias altivaga, Frühstorfer, Ent. Nachr. xix. p. 333 (1893); Stett. ent. Zeit. lv. p. 121, pl. iv. fig. 8 (1894).

Java.

Nearly allied to *D. geraldina* and *D. gabia*.

52. *Delias geraldina.*

Delias geraldina, Grose Smith, Novit. Zool. i. p. 585 (1894); Rhop. Exot. ii., *Del.* pl. v. figs. 1–3 (1895).

New Guinea.

53. *Delias gabia.*

♂. *Pieris gabia*, Boisduval, Voy. de l'Astr., Lép. p. 49 (1832).

New Guinea. Male, B. M.

54. *Delias Kuhni.*

Delias Kuhni, Honrath, Berl. ent. Zeit. p. 295, pl. vi. fig. 2 (1886).
Var. *Delias sulana*, Staudinger, Iris, vii. p. 354 (1894).

Male, Bangkai, Celebes, from Godman and Salvin collection.

Near to *D. themis*; primaries below black; secondaries with about three bright yellow submarginal spots.

55. *Delias themis.*

Pieris themis, Hewitson, Exot. Butt. ii., *Pier.* pl. v. figs. 31, 32 (1861).

S.E. Mindanao, Philippines. Two pairs. B. M.

Three of the specimens are from the Godman and Salvin collection.

56. *Delias singhapura.*

Thyca singhapura, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 353, pl. vii. fig. 2 (1867).

Sandakan, Labuan, Sarawak. Four males. B. M.

Two of the specimens are from the Godman and Salvin collection. In Hewitson's collection there are three males and a female (including Wallace's types).

57. *Delias agoranis.*

Delias agoranis, Grose Smith, Ann. & Mag. Nat. Hist. ser. 5, vol. xx. p. 266 (1887); Rhop. Exot., *Del.* pl. i. figs. 7, 8.

Mergui. Three males. B. M.

58. *Delias cathara.*

Delias cathara, Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. xii. p. 34 (1893); Rhop. Exot. ii., *Del.* pl. v. figs. 7, 8 (1895).

Kina Balu, N. Borneo.

Allied to *D. singhapura* and to the following species.

59. *Delias baracasa.*

Delias baracasa, Semper, Reis. Phil. ii. v. p. 230, pl. xxxiv. fig. 2 (1890).

S.E. Mindanao.

Von Mitis says that this "is most certainly nothing more than an aberration of *D. mindanaënsis*, in which the whole of the marginal spots on the under surface of the hind wings have become white." If this is correct, *D. cathara* must be a parallel form of *D. hyparete*; but, to my mind, there is no certainty in the matter. Both insects are considerably smaller than the red-spotted species, and fall naturally into the *D. singhapura* group.

60. *Delias danala.*

Delias danala, De Nicéville, Journ. Bom. Soc. viii. p. 51, pl. l. fig. 9 (1893).
Delias karo, Hagen, Iris, vii. p. 33, pl. i. fig. 4 (1894).

Sumatra.

Allied to *D. baracasa* and distantly related to *D. agostina.*

61. *Delias enniana.*

♂. *Pieris enniana,* Oberthür, Ann. Mus. Civ. Genova, xv. p. 481, pl. iv. fig. 3 (1879–80).
♀. *Thyca ennia,* part., Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 355, pl. vii. fig. 4, ♀ (1867).
Delias dorothea ♀, Mitis, Iris, vi. p. 146, pl. iii. fig. 4 (1893).

Male, Waigiou, from Godman and Salvin collection.

Wallace's type of the female is in the Hewitson collection.

62. *Delias dice.*

♀. *Pieris dice,* Vollenhoven, Mon. Pier. p. 39, pl. iv. fig. 7 (1865).

New Guinea.

Allied to the preceding species.

63. *Delias nigidius.*

♀. *Delias nigidius,* Miskin, Trans. Ent. Soc. 1884, p. 93; Grose Smith & Kirby, Rhop. Exot. ii. p. 9, *Del.* pl. iii. figs. 3, 4 (1893).
♂. *Pieris jobiana,* Oberthür, Etudes d'Ent. xix. p. 7, pl. ii. fig. 6 (1894).

Port Moresby. Three males from the Godman and Salvin collection.

64. *Delias ennia.*

♂. *Thyca ennia,* Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 355, pl. vii. fig. 4, ♂ (1867).
♀. *Delias dorothea* ♂, Mitis, Iris, vi. p. 146, pl. iii. fig. 3 (1893).

Waigiou. Type in coll. Hewitson.

65. *Delias georgiana.*

Delias georgiana, Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. xv. p. 228 (1895).

Two males and two females, New Britain. Five examples from the Godman and Salvin collection.

This must not be confounded with *D. georgina* of Felder, to which it is in no respect nearly related.

66. *Delias vishnu.*

♂. *Pieris vishnu*, Moore, Cat. Lep. E. I. Comp. i. p. 83, pl. 2 *a*, fig. 5 (1857).

Male, Java. Type, B. M.

Also a very large male and ordinary female, said to be from Timor, in the Hewitson collection.

67. *Delias timorensis.*

♂. *Pieris timorensis*, Boisduval, Sp. Gén. Lép. i. p. 459 (1836); Butler, P. Z. S. 1883, p. 368, pl. xxxviii. fig. 6.

Two males, Larat, Timor-laut, and Tenimber. B. M.

The Tenimber specimens are from the Godman and Salvin collection.

68. *Delias aruensis.*

Delias aruensis, Mitis, Iris, vi. p. 110 (1893).
Thyca bagoe, Wallace (not Boisd.), Trans. Ent. Soc. Lond. iii. vol. iv. p. 355, pl. vii. figs. 3, 3 *a* (1867).

Male and female, Aru. Types in coll. Hewitson.

69. *Delias pœcilea.*

Pieris pœcilea, Vollenhoven, Mon. Pier. p. 13, pl. iii. fig. 3 (1865).

Batchian. Three males, from Godman and Salvin collection.

70. *Delias sacha.*

Delias sacha, Grose Smith, Novit. Zool. ii. p. 75 (1895).

Obi Island.

Possibly more nearly allied to *D. candida*, but I have not seen the species.

71. *Delias euphemia.*

Delias euphemia, Grose Smith, Novit. Zool. i. p. 334, pl. xii. figs. 1, (1894).

Biak, N.E. New Guinea.

Allied to *D. lara* and *D. mysis*.

72. *Delias mysis.*

Papilio mysis, Fabricius, Syst. Ent. p. 475 (1775); Donovan, Ins. New Holl. pl. xxi. fig. 1 (1805).

Queensland, Rockingham Bay, Cape Bowen. Eight examples. B. M.

One male is from the Godman and Salvin collection. In the Hewitson collection there are two others.

73. *Delias æstiva*, sp. n.?

Possibly only a dry-season form of the preceding, but little or nothing appears to be known regarding the seasonal changes in this genus: it differs from *D. mysis* in its generally inferior size, narrower black apical border of primaries continued as a slender line to the external angle; the yellow on the under surface of the secondaries is brighter, more restricted, and more sharply defined, and the scarlet stripe is considerably narrower, more as in *D. timorensis*.

Expanse of wings, ♂ 60–70, ♀ 60 millim.

Port Darwin and Port Essington. Five examples. B. M.

One male was in the Godman and Salvin collection.

74. *Delias cruentata.*

Pieris cruentata, Butler, P. Z. S. 1865, p. 455, pl. xxvi. fig. 2.

Male (type), Mysol; male, Waigiou (coll. G. & S.). B. M.

75. *Delias lara.*

Pieris lara, Boisduval, Sp. Gén. Lép. i. p. 461 (1836).
Var. *Delias intermedia*, Mitis, Iris, vi. p. 149 (1893).

Two males and one female, Port Moresby; male, var. *intermedia*, Port Moresby. B. M.

Seven specimens, all from the Godman and Salvin collection. I am inclined to think that *D. intermedia* will prove to be the dry-season form of this species and *D. cruentata* a nearly allied species; on the other hand, the latter may prove to be the dry-season form and *D. intermedia* a form occurring at the change of the seasons. At present, however, we have no data to go upon.

76. *Delias agostina.*

Pieris agostina, Hewitson, Exot. Butt. i., *Pier.* pl. i. figs. 1, 2 (1852).

Darjiling, Nepal, Assam, East Pegu. Eighteen examples. B. M.

Thirteen of the specimens are from the Godman and Salvin collection. In the Hewitson collection are seven other specimens.

The following species is so remarkably variable that it has been split up into numerous named forms. In my opinion the Indian and Chinese forms represent modifications of one widely distributed species, the Indian variations ranging from almost white to almost black, the Chinese varying less in ground-colour but with the markings more or less run together into streaks. The *D. Horsfieldii* form occurs both in India and China, as also does typical *D. belladonna*. The more or less development of yellow patches on the upper surface of the secondaries is certainly an unreliable character and not of specific value; otherwise both *D. ithiela* and *D. patrua* would have claims to separation. I shall consider this species under its varieties.

77. *Delias belladonna.*

Papilio belladonna, Fabricius, Ent. Syst. iii. 1, p. 180 (1793); Donovan, Nat. Rep. i. pl. xxxv. (1823).
Var. *Pieris Horsfieldii*, Gray, Zool. Miscell. p. 32 (1831); Herrich-Schäffer, Ausl. Schmett. figs. 13, 14 (1850).
Var. *Pieris sanaca*, Moore, Cat. Lep. E. I. Comp. i. p. 79 (1857); P. Z. S. 1857, p. 103, pl. xliv. fig. 4.
Pieris chrysorrhœa, Vollenhoven, Mon. Pier. p. 6, pl. ii. fig. 4 (1865).
Var. *Thyca ithiela*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 242 (1869); Lep. Exot. p. 62, pl. xxiv. fig. 1 (1871).
Var. *Thyca berinda*, Moore, P. Z. S. 1872, p. 566; Waterhouse, Aid, i. pl. xii. (1881).
Var. *Delias flavalba*, Marshall, P. Z. S. 1882, p. 759.
Var. *Delias Boylei*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 58 (1885).
Var. *Delias Hearsayi*, Butler, *l. c.*
Var. *Delias patrua*, Leech, Entom. xxiii. p. 46 (1890); Butt. China, pl. xxxvii. figs. 1, 2 (1893).
Var. *Delias lativitta*, Leech, Butt. China, pl. xxxv. fig. 1 (1893).
Var. *Delias adelma*, Mitis, Iris, vi. p. 130; Leech, *t. c.* pl. xxxvii. figs. 5, 6 (1893).
Var. *Delias subnubila*, Leech, *l. c.* figs. 7, 8 (1893).
Var. *Delias zelima*, Mitis, Iris, vi. p. 131 (1893).
Var. *Delias surya*, Mitis, *t. c.* p. 132 (1893).
Var. *Delias amarantha*, Mitis, *t. c.* p. 133, pl. ii. fig. 3 (1893).

Sixty-six specimens in B. M. and coll. Hewitson as follows:—

Var. 1. *D. flavalba.*

Darjiling. Three in B. M. Three (not labelled) in coll. Hewitson. Two of our specimens from the Godman and Salvin collection. One of Hewitson's examples is almost wholly white above, the white spots running completely together almost to the outer border, and therefore more aberrant than in the following:—

Var. 2. *D. lativitta.*

Ta-chien-lu, Moupin, Bernardmyo in Burma (*Leech*). Not in the Museum series at present.

Var. 3. *D. sanaca = chrysorrhœa.*

Six specimens, including the type, in B. M. from Darjiling and Kulu, one of which is from the Godman and Salvin collection; also two without locality in coll. Hewitson.

Var. 4. *D. Hearsayi.*

Four specimens, Kulu, Landoor; type, Barrackpore, in B. M. Two of these from the Godman and Salvin collection. The type has the basal spot orange, doubtless from discoloration.

Var. 5. *D. Boylei = amarantha.*

Four specimens: male (type), Darjiling; two males and one female, Sikhim.

The type of this species differs a little from the others, the whitish spots being less defined and streaky, the basal spot red instead of yellow, the anal patch dull saffron-yellow; the figure by von Mitis is very like it, but is from a slightly less discoloured example.

Var. 6. *D. subnubila.*

Moupin, Huang-mu-chang, and Pu-tsu-fong, Western China (*Leech*).

Var. 7. *D. belladonna* (typical).

Male, N.W. Himalayas; female, "Ind. orient." One pair only. B. M.

The female is an old and somewhat discoloured specimen, the yellow patches having become faded and reddish; it, however, agrees well in pattern with Donovan's figure. I believe the female figured by Leech (pl. xxxvii. fig. 4) should be referred to this variety, but the male (fig. 3) to *D. Horsfieldii.* However, it is of no great consequence, as all these forms grade into one another in a hopelessly inconsiderate manner.

Var. 8. *D. Horsfieldii, = surya* and *zelima.*

Thirteen examples varying in size, elongation of wing, and size of discal spots in secondaries; also five intergrades between this variety and the next. Kali valley, N.W. India; Kulu, Darjiling, Bhutan, Nepal, and Burma.

Of the eighteen examples, twelve were received from Messrs. Godman and Salvin, including all the connecting links between typical *D. Horsfieldii* and *D. ithiela.*

Var. 9. *D. ithiela* ♂,=*D. berinda* ♀.

Nineteen specimens from Darjiling (including the type), from the Khasia and Naga Hills and Assam; thirteen of these were received from Messrs. Godman and Salvin. Also one example in the Hewitson collection.

D. berinda agrees with our solitary female.

Var. 10. *D. adelma.*

Chang-Yang, Central China (*Leech*).

This form is even blacker than *D. ithiela*, the white discal spots being replaced by grey streaks; the yellow at anal angle and on abdominal area of secondaries has, however, reappeared.

Var. 11. *D. patrua.*

Chang-Yang, Central China (*Leech*).

Only differs from the preceding variety in the reduction of the yellow patch at base of secondaries above and of all the yellow markings below. It was most inconsistent on the part of my excellent friend Mr. Leech to regard it as a distinct species, and one of these days he will doubtless admit as much. It may be supposed that my present action is also inconsistent with that formerly taken by me; but this is not so. I have always followed the plan of regarding differently marked types, especially if they did not agree in form and had been received from different localities, as distinct species; but whenever I have obtained series of intergrades which proved their identity, I have at once admitted the impossibility of keeping them separate. A very small difference in pattern may be of specific value, but a mere variation in the size of spots between two specimens taken in the same locality is most unlikely to be of importance.

78. *Delias aglaia.*

Papilio aglaia, Linnæus, Syst. Nat. ed. x. p. 465 (1758).
Papilio pasithoe, Linnæus, Syst. Nat. ed. xii. p. 755 (1767); Donovan, Ins. China, pl. xxx. fig. 2 (1799).
Papilio dione, Drury, Ill. Exot. Ent. ii. pl. viii. figs. 3, 4 (1773).
Papilio porsenna, Cramer, Pap. Exot. i. pl. xliii. D, E (1776).

Darjiling, Assam, Silhet, Nepal, Tenasserim, Burma, China. Thirty-four examples. B. M.

Fifteen of the specimens were received from Messrs. Godman and Salvin; there are also four others in the Hewitson collection. This species varies a good deal as regards the amount of creamy yellow on the upper surface of the secondaries; in some examples from Burma it almost fills the area included between the first and second median branches, leaving only four diffused spots between it and the costa; in others it is limited by the first median branch, leaving five diffused spots; but all kinds of links between the two types also occur.

79. *Delias parthenope.*

Thyca parthenope, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 347 (1867).
Thyca ninus, Wallace, *l. c.* pl. vii. fig. 1.

Elephant Island, Malacca, Borneo. B. M. Sumatra (G. & S. coll.).

The type from Malacca is in the Hewitson collection mixed with the preceding species.

80. *Delias pandecta.*

Delias pandecta, Staudinger, Iris, 1889, p. 23.

Two males and one female, Palawan. Four examples (Godman and Salvin coll.).

We have a female from Nias which resembles this species in colouring, but differs above in having the greyish-white macular belt on the upper surface of the primaries across the end of the cell, so that it touches the white spot. This may possibly be nearer to *D. aglaia*, but without the male it is impossible to decide.

81. *Delias pandemia.*

Thyca pandemia, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 346, pl. vi. figs. 4, 4 *a* (1869).

Palawan, Labuan, and Sarawak. B. M.

Fourteen examples, of which twelve are from the Godman and Salvin collection. Wallace's type is in the Hewitson collection.

82. *Delias henningia.*

Pontia henningia, Eschscholtz, Kotzeb. Reise, iii. p. 214, pl. ix. figs. 20 *a*, *b* (1821).
Var. *Thyca lucerna*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 243 (1869); Lep. Exot. p. 62, pl. xxiv. figs. 2, 5 (1871).
Var. *Thyca ochreopicta*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 244 (1869); Lep. Exot. p. 63, pl. xxiv. figs. 3 (♀), 4 (♂) (1871) *.

Twenty-six examples, of which fifteen are from the Godman and Salvin collection. They separate into the following forms:—

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* I transposed the sexes of the two variations of this species.

1. *D. ochreopicta.*

Six examples. Luzon and Mindanao. (Three, G. & S. coll.)

2. *D. ochreopicta*, var.

Eight examples. Mindoro, Guimaras, Luzon. (Seven, G. & S. coll.)

In some respects much nearer to *D. lucerna* and *henningia.*

3. *D. henningia.*

Nine examples. "China," Mindoro, Manilla, Luzon. (Three, G. & S. coll.)

Barely distinct from the following.

4. *D. lucerna.*

Three examples. Philippines; no special locality noted. (Two, G. & S. coll.)

Chiefly differs from the preceding variety in the greater expanse of deep yellow on the secondaries.

Of the above forms *D. ochreopicta* is the best marked, inasmuch as it nearly approaches *D. pandemia* in both sexes, chiefly differing from it in the broad grey-and-white belt across the primaries. Hewitson's collection contains a male of var. 1, a pair of var. 3, and a female of var. 4.

83. *Delias ottonia.*

Delias ottonia, Semper, Reis. Phil. ii. v. p. 235, pl. xxxiv. figs. 7–9 (1890).

Davao and Mindanao (♂ ♀, coll. G. & S.; ♂, B. M.).

84. *Delias egialea.*

Papilio egialea, Cramer, Pap. Exot. ii. pl. clxxxix. D, E (1779).
Delias tyche and *apriata*, Hübner, Verz. bek. Schmett. p. 91 (1816).

Eight examples. Java (two from G. & S. coll.). B. M. Two females in the Hewitson collection.

85. *Delias crithoe.*

Pieris crithoe, Boisduval, Guérin & Percheron, Gen. Ins. (1835); Vollenhoven, Mon. Pier. p. 7 (1865).

Java. One female, G. & S. coll.; three females, B. M. A pair also in the Hewitson collection.

86. *Delias bromo.*

♂. *Delias bromo,* Frühstorfer, Ent. Nachr. xix. p. 335 (1893).
♀. *Delias dymas,* De Nicéville, Journ. A. S. Beng. lxiii. pl. v. fig. 7, p. 44 (1894).

Java. ♂, B. M.

87. *Delias tobahana.*

♀. *Delias tobahana,* Rogenhofer, Verh. zool.-bot. Ges. Wien, xlii. p. 571 (1892).
♂. *Delias derceto,* De Nicéville, Journ. Bomb. Soc. viii. p. 51, pl. 1. fig. 4 (1893).

Sumatra.

Not in the Museum series.

88. *Delias parthenia.*

Delias parthenia, Staudinger, Iris, v. p. 449 (1892).

Male, Kina Balu. B. M.

89. *Delias ninus.*

Thyca ninus, Wallace, Trans. Ent. Soc. Lond. ser. 3, vol. iv. p. 347 (1867).
Thyca parthenope, Wallace, *l. c.* pl. vi. figs. 5, 5 *a* (1867).

Penang. Two males. B. M.

The type (from Malacca) is in the Hewitson collection.

90. *Delias pyramus.*

Thyca pyramus, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 347 (1867).
Pieris thisbe, Gray, Lep. Ins. Nep. pl. vii. fig. 1 (1846).
Var. *Delias scandha,* Doherty, Journ. Asiat. Soc. Beng. vol. lv. 2, p. 262 (1886).

Darjiling, Nepal, Bhutan, East Pegu. Fourteen examples. B. M.

Nine of the specimens are from the Godman and Salvin collection. The Hewitson collection contains five others.

91. *Delias thysbe.*

♀. *Papilio thysbe,* Cramer, Pap. Exot. iii. pl. ccxxxiii. C (1782).
Pieris acalis, Godart, Enc. Méth. ix. p. 148 (1819).

China.

This species appears chiefly to differ from the female of *D. pyramus* in the grey colouring and heavy black border of the secondaries. I have never seen the species, and Mr. Leech's work or ct e butterflies of China does not include any of the species of *-lias* excepting *D. belladonna* and its varieties.

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92. *Delias blanca.*

Pieris blanca, Felder, Wien. ent. Mon. vi. p. 284 (1862); Reise der Nov., Lep. ii. p. 160, pl. xxiv. figs. 6, 7 (1865).

Luzon.

93. *Delias orphne.*

Thyca orphne, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 361, pl. viii. fig. 2 (1867).

Malacca. Two examples, including the type in coll. Hewitson.

94. *Delias georgina.*

Pieris georgina, Felder, Wien. ent. Mon. v. p. 298 (1861); Reise der Nov., Lep. ii. p. 160, pl. xxiv. figs. 4, 5 (1865).

Luzon.

95. *Delias cinerascens.*

Delias cinerascens, Mitis, Iris, vi. p. 126, pl. ii. fig. 2, ♀ (1893).

Kina Balu.

96. *Delias simanabum.*

Delias simanabum, Hagen, Iris, vii. p. 34, pl. i. fig. 3 (1894).

Sumatra.

97. *Delias momea.*

Pieris momea, Boisduval, Sp. Gén. Lép. i. p. 477 (1836).
Delias Hageni, Rogenhofer, Verh. zool.-bot. Ges. Wien, xlii. p. 572 (1892).
Delias datames, De Nicéville, Journ. Bomb. Soc. viii. p. 53, pl. l. fig. 8 (1893).

Java. ♂, B. M.

A female example is in the Hewitson collection. Occurs also in Sumatra; but I fail to understand why de Nicéville considers *D. simanabum* to be the same species. It appears to me to be widely distinct, not even belonging to the same group of species.

98. *Delias nysa.*

Papilio nysa, Fabricius, Syst. Ent. p. 473 (1775).
♀. *Papilio endora*, Donovan, Ins. New Holl. pl. xx. fig. 2 (1805).

Moreton Bay, Sydney, Queensland. Twelve examples. B. M.

Five specimens are from the Godman and Salvin collection. The Hewitson collection also contains five specimens.

The following species may or may not belong to this genus: I have never seen a specimen:—

99. *Delias? d'Albertisi.*

♂. *Pieris d'Albertisi,* Oberthür, Ann. Mus. Civ. Genova, xv. p. 480, pl. iv. fig. 4 (1879–80).
♀. *Delias discus,* Honrath, Berl. ent. Zeit. xxx. p. 130, pl. iv. fig. 4 (1882).

New Guinea.

A curiously coloured species, vaguely resembling *Tenaris* and *Dyctis.*

Since the completion of this Revision Mr. Grose Smith has described three additional species in the Ann. & Mag. Nat. Hist. for April, 1897, p. 403.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xx., *October* 1897.

Descriptions of six Pierine Butterflies of the Genus Catasticta *in the Collection of the British Museum.* By ARTHUR G. BUTLER, Ph.D. &c.

THE following undescribed species were mostly collected by the late Mr. Buckley in Ecuador, and were confounded by Hewitson (who unfortunately destroyed the labels recording their exact habitats) with well-known species.

1. *Catasticta vapina*, sp. n.

Nearest to *C. pinava*, which it nearly resembles on the upper surface; all the pale markings are, however, clearer, more sandy yellowish, excepting those on the outer margin, which are white; those towards the base are extended in a diffused manner towards the base; the spots crossing the disk of secondaries are acutely hastate, diffused externally. On the under surface the colouring and pattern more nearly approach those of *C. philothea*, but all the light areas are wider and more sharply defined; the general colouring of the primaries is clear buff, that of the secondaries pearl-white, washed with sulphur-yellow on the inner half of the discal and marginal white markings, and here and there over the basal area much as in the secondaries of *C. manco*; the apical area and marginal spots of the primaries are also similarly tinted.

Expanse of wings 46–52 millim.

Ecuador (*Buckley*). Two males, coll. Hewitson.

From all its near allies this species may be distinguished by its clearer brighter colouring both above and below, by the sharp definition of the under-surface markings, by the much wider and less crescent-shaped disco-submarginal spots across the under surface of the primaries and the wider corresponding belt of markings across the secondaries. Hewitson confounded this species with *C. modesta.*

2. *Catasticta cinerea*, sp. n.

Primaries above ash-grey, with the veins and costal margin broadly black; outer fourth of the wings occupied by a broad black border, crossed by a series of whitish-grey spots; a marginal series of minute white dots: secondaries with the basal half ash-grey irrorated with black; outer half black, crossed by a series of whitish-grey spots; a marginal series of small sulphur-yellow spots. Body blackish; palpi with two lateral white lines; collar with a small yellow spot on each side. Under surface nearly resembling that of *C. uricœcheœ*, but the grey areas more slate-coloured, the yellow markings deeper in tint, all the pale markings more sharply defined and those crossing the primaries broader.

Expanse of wings 65 millim.

Locality unfortunately not preserved. One male, coll. Hewitson.

This very fine species and the two following were confounded by Hewitson with *C. uricœcheœ*; the present species is, however, in some respects nearer to *C. semiramis* and *amastris.*

3. *Catasticta vulnerata*, sp. n.

Allied to *C. uricœcheœ*, but easily distinguished by the fact that on the upper surface the basal area of the primaries as well as of the secondaries is suffused with crimson, the discal white spots narrower, the crimson on the secondaries more restricted and greyer, the spots of the discal series small, paler red, and diffused, the marginal internervular spots whitish. On the under surface the markings are more sharply defined, the yellow markings brighter, the grey discal belt across the secondaries with nearly straight inner edge, and therefore broader, the white and yellow belt bounding it internally consequently narrower; the marginal spots broader, slightly less angular.

Expanse of wings 58–61 millim.

Ecuador (*Buckley*). Three males.

4. *Catasticta tricolor*, sp. n.

Also allied to *C. uricœcheœ*, but with all the spots on the upper surface of the primaries bright lemon-yellow; the scarlet markings on the secondaries less brilliant in colour, the patch towards the base more restricted, the spot within the end of the cell diffused inwardly and those across the disk much elongated; a marginal series of yellow spots. On the under surface the white and yellow markings are so much reduced in size as to give this species a decidedly greyer aspect, in which respect it somewhat approaches *C. cinerea*; it, however, appears to differ from all its allies in having the base of the abdominal fold of the secondaries bordered with scarlet.

Expanse of wings 63 millim.

Ecuador. One fine male example.

In the Hewitson collection under the name of *C. sisamnus* are two males of what I believe to be a very distinct species allied to both *C. hegemon* and *C. fliza*. Unfortunately the habitat of the species has not been preserved, and as this group is somewhat more variable than others in the genus and the species more difficult to describe so as to be easily recognizable, I prefer to leave it unnamed until specimens come to hand with information as to habitat.

The following species was confounded with his *C. anaitis* by Hewitson:—

5. *Catasticta sordida*, sp. n.

♂. Above with the general colouring of *C. anaitis*, but slightly more yellow; the spot in the cell and those of the discal series of the primaries nearest to the costa decidedly smaller: secondaries with the external blackish border occupying nearly half the wing and crossed by large well-defined spots of the ground-colour; a marginal series of small white spots. Below, all the pale markings are reduced and the brown areas consequently much broader; the pale bands also are cream-coloured, not pure white, and the yellow streaks and spots deeper in tint.

Expanse of wings 62–68 millim.

Bolivia. Three males.

6. *Catasticta Staudingeri*, sp. n.

Allied to *C. corcyra*, with which it has been confounded; it differs above in the restriction of the black apical patch of the primaries, which becomes linear from the second median nervule; on the under surface the apical border is broadly bright yellow and traversed by two grey lunular markings; the secondaries are bright yellow, the veins black, with white borders; in the markings of these wings it differs from *C. corcyra* in having the irregular postmedian stripe placed a little nearer the outer margin and in having a well-defined boldly zigzagged submarginal brown line, the outer angles of which terminate on the margin at the extremities of the nervures.

Expanse of wings 54 millim.

E. Peru. One male (type), B. M.

Also five examples from Ecuador in the Hewitson collection labelled as *C. corcyra*. Of the latter we have three examples from the Ucayali River, Peru, which correspond exactly with Felder's figure.

As I have just heard that Dr. Staudinger, of Dresden, is interesting himself in the study of this genus, I have named the preceding very distinct species in honour of him.

Nov. 1897

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 6, Vol. xx., *November* 1897.

A Revision of the Species of Butterflies belonging to the Genus Teracolus, *Swains.* By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

[Continued from p. 399.]

25. *Teracolus Mananhari.*

Pieris Mananhari, Ward, Ent. Month. Mag. vi. p. 224 (1870); Afr. Lep. p. 2, pl. ii. figs. 1–4 (1873).
Anthocharis flavida, P. Mabille, Bull. Soc. Ent. Fr. (5) vii. p. xxxvii (1877).
Teracolus flavidus, P. Mabille, Grand. Madag. pl. xl. figs. 1, 1 *a*, 2, 2 *a* (1885).
Teracolus nothus, Mabille, *l. c.* p. 290 (1886)[*].

Madagascar.

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[*] M. Mabille quotes pl. xxxvi. *a*. fig. 2, but no such plate appears to have been published hitherto; at any rate, it is not in the Museum Atlas to the work.

Ward described the wet-season form (which is largest) with almost plain yellow under surface in the male, about two black spots in the primaries and an orange costal streak to the secondaries being the only markings on that surface; in the female the apical area of the primaries and the secondaries are buff on the under surface, the former with a subapical black bar representing the inner boundary of the black border of the upper surface and a discocellular black spot, the latter often with a slender interrupted angular discal stripe. *T. nothus* is represented by two intermediate forms, which occur in both sexes. The first has the under-surface pattern of *T. Mananhari* (typical), but the apex of the primaries and the secondaries are washed with rosy sienna; the second is slightly less reddish below, but has the addition of a longitudinal brown stripe through the centre of the secondaries; the female also has indications of striations on these wings. *T. flavida* is a smaller form in which the striation of the under surface appears in the male, but the angular band in that sex and the subapical band in the female are obsolete. Finally, there is a true dry-season form of which we possess the male only; it is small, the apex of primaries and the secondaries below fleshy buff, indistinctly striated, but without longitudinal streak or angular discal stripe.

26. *Teracolus incretus.*

♀. *Teracolus incretus*, Butler, Ent. Month. Mag. xviii. p. 146 (1881).
♂. *Callosune vulnerata*, Staudinger, Exot. Schmett. p. 46, pl. xxiii. (1884).

Ranges from the Victoria Nyanza southwards to Nyasa and eastwards to Mombasa and Bagomoyo.

Both types of the species are undoubtedly sexes of the wet-season form; the bad colouring of Staudinger's figure led Mr. Marshall to suppose that *T. vulnerata* was "clearly the dry-season form," but he is mistaken, for we have the latter. It is very rosy beneath, the male having the apical half and the secondaries, excepting towards apex, fleshy sienna, transversely striated with brown and more or less spotted; there is also frequently a longitudinal dusky streak from the base through the lower half of the discoidal cell in the secondaries.

27. *Teracolus auxo.*

Anthocharis auxo, Lucas, Rev. et Mag. de Zool. 1852, p. 422.
Anthopsyche topha, Wallengren, Lep. Rhop. Caffr. p. 15 (1857).
Anthocharis keiskamma, Trimen, Rhop. Afr. Austr. p. 56, pl. ii. figs. 3, 4 (1862–6).

The yellow form of this species appears to be strictly confined to Kaffraria and Natal, but a somewhat paler race occurs in Matabeleland. The extreme types *T. auxo* and *keiskamma* were proved by Mansel Weale and recently by Mr. Marshall to be wet- and dry-season forms of one species; *T. topha*, which is usually regarded as identical with *T. keiskamma*, appears to me to be an intergrade of which we possess six examples in the Museum.

Of the Matabele type, which only differs in its somewhat whiter coloration, we only possess males of the wet and intermediate forms.

28. *Teracolus dissociatus*, sp. n.

Allied to *T. auxo*, but with whitish or white ground-colour, tinted along edge of apical area with sulphur-yellow. The wet-season form differs also from that of *T. auxo* in that the male has a black oblique bar bounding the inner edge of the orange apical patch; the intermediate form * chiefly differs from *T. topha* in its white colouring and the much more limited apical orange patch; the dry-season form differs from *T. keiskamma* in its white colouring and much darker borders, but more especially in the females. In size this species agrees in all its forms with the more southern butterfly.

Ranges from Nyasaland northward by Kilima-njaro to the Victoria Nyanza.

29. *Teracolus evarne.*

Pontia evarne, Klug, Symb. Phys. pl. vi. figs. 1–4 (1829).
Pontia liagore, Klug, *l. c.* figs. 5–8 (1829).
Teracolus citreus, Butler, P. Z. S. 1876, p. 152.
Teracolus xanthevarne, Butler, *t. c.* p. 163.
Teracolus syrtinus, Butler, *t. c.* p. 163.

One of the most widely distributed and variable species of its group, ranging from Upper Egypt and the White Nile to Abyssinia, southwards to the Albert Nyanza, the Victoria Nyanza, and Kilima-njaro, and eastwards to Mombasa. On the western side it appears to be rare, but we have one example (the type of *T. syrtinus*) said to be from "Senegal" and a second recorded as simply from "West Africa." In ground-colour *T. evarne* varies from primrose-yellow to white, the typical form being almost white with yellow diffused bordering to the orange apical area; this is the wet-season form of the species and the most heavily marked with black. *T. xanthevarne* appears to be the prevalent form of the species in

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* One of the supposed types of *T. syrtinus* referred to by Messrs. Trimen and Marshall.

Upper Egypt, the White Nile, and Abyssinia, and chiefly differs in its inferior size, yellower colouring, and frequently in the larger orange patch on the primaries. *T. syrtinus* is an intermediate-season form which apparently ranges westwards from Mombasa through the Sabaki valley, past Kilimanjaro and the Victoria Nyanza to Wadelai, and thence across the continent to Senegal, where it varies slightly from the normal form, the lower extremity of the orange apical patch being indistinctly bordered with blackish, so as vaguely to resemble the wet-season form of *T. auxo* (nobody, however, with an eye for species could calmly compare the two and for a moment regard them as identical). The males of this form never have the margin of the secondaries dotted, and on the under surface they show a slight tendency to rosy tinting. The females are altogether more lightly marked than those of typical *T. evarne*. *T. liagore* is probably little more than a rare starved albinism occurring in Egypt and on the borders of the Red Sea; in its weak markings it would seem to be a dry-season form, but the colouring of the under surface is that of the wet-season. I should look upon it as an intermediate form probably occurring just before the rains. *T. citreus* is the dry-season form occurring with typical *T. evarne*, but smaller, much more lightly marked above, and very rosy below.

30. *Teracolus Phillipsi.*

Teracolus Phillipsi, Butler, P. Z. S. 1885, p. 772, pl. xlvii. fig. 11.

Somaliland.

This is a well-defined local representative of *T. evarne* most nearly approaching the varietal form *T. liagore* in character. In all its seasonal phases it is much more lightly marked and paler in colouring than *T. evarne*, as well as slightly smaller than in the corresponding phases of *T. evarne*. The ground-colouring is always white, with the pale orange apical patch very faintly tinted with yellow along the inner edge; the marginal bordering even of the wet-season male is comparatively weak, while the secondaries are always unspotted. The female in the wet-season has the upper surface marked almost as in the dry-season female of *T. evarne*, while the intermediate type, which is much smaller, has the female still less marked above and striated below with greyish olive; the dry-season form is very small, the male without marginal markings, the female very faintly marked, but both sexes rosy and more or less striated below.

31. *Teracolus eucharis.*

Papilio eucharis, Fabricius, Syst. Ent. p. 472 (1775), but not Donovan.
Papilio aurora, Cramer, Pap. Exot. iv. pl. ccxcix. figs. A, B (1782).
Euchloe cœneos, Hübner, Verz. bek. Schmett. p. 94 (1816).
Pieris titea, Godart, Enc. Méth. ix. p. 124 (1819).
Teracolus pseudevanthe, Butler, P. Z. S. 1876, p. 164, pl. vii. fig. 16.
Teracolus pallens, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 49 (1877).

Ranges from Bombay southwards to Madras and Ceylon.

The seasonal forms of this species follow the usual rules, the wet-season forms being heavily marked above, yellowish and white with the usual markings below; the intermediate forms are similar above, but the females show more orange in the apical black patch; the dry-season forms are more lightly marked above and much more rosy and more strongly striated below. Of each form there are two phases, one showing a double bar on the under surface of the male secondaries, the other only showing a costal dash or dot. Of the double-barred type are, first, the wet-season form, which has received no distinctive name; then the intermediate form, representing *T. pseudevanthe*; lastly, the dry-season form, which is typical of *T. eucharis*. Of the costal marked type the wet-season form is again unnamed; the intermediate form is *T. aurora*; and the dry-season form *T. pallens*, which differs from all the other phases in showing no trace of the dusky spot on the inner edge of the orange apical patch in the male.

32. *Teracolus evanthe.*

Anthocharis evanthe, Boisduval, Sp. Gén. Lép. i. p. 567 (1836); Mabille in Grand. Mad. pl. xli. figs. 1, 2 (1887).
Anthocharis ena, Mabille, Bull. Soc. Philom. (7) iii. p. 134 (1879); Grand. Mad. pl. xl. figs. 6, 6 *a* (1887).

Madagascar.

This species appears to have no wet-season form. The variety *T. ena* is perhaps a little drier in character than the type, but both belong to dry-season phases.

33. *Teracolus evanthides.*

Callosune evanthides, Holland, Proc. U. S. Nat. Mus. vol. xviii. p. 268, pl. viii. fig. 9 (1895).

Aldabra, Comoro Islands.

Allied to *C. evanthe*, but evidently distinct. It has the brown irroration and striation of the under surface characteristic of the dry-season *T. evanthe* of Madagascar, but upon a pale yellow ground-tint, whereas in *T. evanthe* the ground-colouring of the under surface is dead white.

34. *Teracolus etrida.*

Anthocharis etrida, Boisduval, Sp. Gén. Lép. i. p. 576 (1836).
Teracolus pernotatus, Butler, P. Z. S. 1876, p. 159, pl. vii. fig. 1.
Teracolus farrinus, Butler, *t. c.* fig. 2.
Teracolus purus, Butler, *t. c.* p. 160, pl. vii. figs. 14, 15.
Teracolus casimirus, Butler, *t. c.* p. 161, pl. vii. fig. 5.
Teracolus bimbura, Butler, *t. c.* p. 161, pl. vii. figs. 3, 4.

Ranges from Persia to N.W. India, and thence through Bombay southwards to the foot of the Nilghiri Hills. I have seen no examples from the eastern side of India. I think that Mr. Marshall is incorrect in his assertion that it appears to range practically throughout India: our selected series of seventy-four specimens does not include one example from Eastern India. This makes it all the more probable that Mr. Marshall's inconsistent action in regarding the Ceylonese *T. limbatus* as a variety of *T. etrida*, whilst he regarded *T. danae* as quite distinct from the company to which he gave the name of *T. eupompe*, was an error. Just as *T. danae* differs from *T. dulcis*, so does *T. limbatus* differ from *T. etrida*, whilst the latter has the additional advantage of being a purely insular form.

Of the varieties of *T. etrida* to which I gave distinctive names, *T. farrinus* is the most heavily marked on the upper surface, though *T. pernotatus* runs it very close; *T. purus* is a dwarf form of the species with rather more orange at apex than in typical *T. etrida*. These are all wet-season or intermediate forms. The dry-season phase is represented by *T. casimirus* and the starved form of it which I described under the name of *T. bimbura*.

35. *Teracolus limbatus.*

Teracolus limbatus, Butler, P. Z. S. 1876, p. 161.

Ceylon.

The males of this species are always heavily bordered, and sometimes so much so that the marginal spots are perfectly confluent throughout; the species seems never to attain to the size of the largest examples of *T. etrida*. The female on the upper surface (like its male) resembles most nearly that sex of *T. etrida*, var. *farrinus*, but is more heavily bordered, shows scarcely a trace of the spot on the interno-median area of primaries, has brown instead of black markings on the under surface of these wings, and the discal markings on the secondaries very ill-defined. An example of this sex is in the Hewitson collection.

36. *Teracolus ephyia.*

Pontia ephyia, Klug, Symb. Phys. pl. vi. figs. 9, 10 (1829).

Occurs from Ambukol in Nubia northward to Upper Egypt.

The wet-season form of the male nearly resembles the male of typical *T. etrida* on the upper surface, but the female shows no trace of the interno-median spot of that species, whilst on the under surface all the discal spots are wanting. The dry-season form is smaller, shows scarcely a trace of the black inner edging to the orange subapical patch; the secondaries also have no marginal spots and the under surface is suffused with buff.

Mr. Marshall was quite correct as to the females formerly associated by me with this insect having nothing to do with it, but he should also have discovered how closely allied it is both to *T. etrida* and *T. lais*.

37. *Teracolus lais.*

Teracolus lais, Butler, P. Z. S. 1876, p. 145.
Teracolus halyattes, Butler, *t. c.* pl. vi. fig. 8, ♂.
Teracolus lycoris ♀, Butler, *t. c.* p. 140, pl. vi. fig. 6, ♀.

Ranges from Kimberley across the Orange Free State to Swaziland.

The female of *T. lais*, the wet- (not dry-) season form, bears a vague resemblance to that of *T. etrida*, var. *bimbura*, but the orange subapical bar has no inner blackish edging and there is no spot on the second median areole of primaries, the two marginal spots nearest to apex of secondaries are also confluent; on the under surface the basal area and apical border of primaries and the secondaries, with the exception of a discal patch towards apex, are washed with pale buff; the orange subapical curved bar of the primaries is paler than above, but the interno-median black spot is distinct. The males vary greatly in expanse, the type measuring about 34 millim., and a second example from the Godman and Salvin collection no less than 46. It approaches *T. ephyia*, but has more nearly the upper-surface pattern of *T. bimbura*, with pure white under surface (indistinctly irrorated with black scales when examined through a lens), the discocellular dots black, that of the secondaries attached to an orange spot; the costa of these wings is also narrowly orange towards the base.

My incorrect identification of the sexes of the dry-season form (*T. halyattes*) led Mr. Marshall into error. The male of the latter is much like the wet-season form above, but both sexes below are alike, with grey-speckled rosy apical area to primaries and rosy secondaries, showing traces of an angular discal series of dusky spots, one or two of which are more or less prominent on the upper surface of the female; the apical patch in this sex is dark brown, with a curved subapical series of indistinct orange spots.

38. *Teracolus pallene.*

Anthocharis pallene, Hopffer, Peters's Reise, p. 358, pl. xxiii. figs. 7, 8 (1862).
Callosune pseudetrida, Westwood, in Oates's Matabeleland, p. 340 (1881).
Teracolus cinctus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

I believe that these are synonymous, although the description of the under surface of Westwood's type does not correspond in every detail with that of *T. cinctus*, and the female is described as having a subapical yellow fascia, whilst the female of *T. cinctus* has the apical area black, crossed by ill-defined narrow ochreous dashes. Still I believe that variation may account for these discrepancies. One thing is certain, Westwood's insect must belong to the *T. daira* group, and not to the singular mixed community in which Mr. Marshall has placed it, for it undoubtedly has the orange apical patch of the male black-bordered internally. Assuming that the above synonymy is correct, the species must be intermediate between *T. lais* and *T. infumatus*, and must range from the Victoria Nyanza southward to Nyasaland, and thence to Tete on the Zambesi. The intermediate form has the under surface washed with warm buff, and the dry-season form is small, with narrower black borders, the black internal streak ill-defined, and the secondaries rosy on the underside.

39. *Teracolus infumatus.*

Teracolus infumatus, Butler, P. Z. S. 1896, p. 128, pl. vi. figs. 5, 6.

Ranges from the Victoria Nyanza due south to Nyasa.

This species in its wet-season form is like a large and very heavily marked form of *T. pallene*, to which it is undoubtedly allied; but the intermediate-season form (of which we have a male from Lake Tanganyika) has the apical patch of orange more extended on the costa and not bordered internally by a black bar. This fact brings the species somewhat nearer to the *T. daira* group, in which the dry-season form has a similar character.

40. *Teracolus daira.*

Pontia daira, Klug, Symb. Phys. pl. viii. figs. 1–4 (1829).
Anthocharis nouna, Lucas, Expl. Alg., Zool. iii. p. 350, pl. i. fig. 2 (1849).
Anthopsyche demagore, Felder, Reise der Nov., Lep. p. 186 (1865).
Anthopsyche dalila, Felder, Reise der Nov., Lep. p. 188 (1865).
Teracolus xanthus ♀, Swinhoe, P. Z. S. 1884, p. 440, pl. xxxix. fig. 11.
Teracolus odysseus ♂, Swinhoe, *t. c.* p. 441, pl. xl. fig. 3.

Appears to range from Algeria to Egypt and thence southwards to Abyssinia and Somaliland.

The type of Felder's *T. dalila* is identical with the typical wet-season form, *T. odysseus* is an intermediate form, and *T. nouna* (of which *T. demagore* is a synonym) is the dry-season form. The latter, owing to its resemblance in the male sex to the dry-season forms of two other allied species, has been united to them and placed in the next group of species by Mr. Marshall, the whole being united under one heading as what he elegantly calls a "job lot."

41. *Teracolus stygia.*

♂. *Anthopsyche stygia*, Felder, Reise der Nov., Lep. p. 188 (1865).

Bogos, N.E. Africa.

This is an intermediate-season form, perhaps not distinct from *T. odysseus*, which it nearly resembles; it is, however, larger and differs slightly in some details of its pattern. The type, which I have examined, is in the collection of the Hon. Walter Rothschild.

42. *Teracolus Heuglini.*

Anthopsyche Heuglini, Felder, Wien. ent. Monatschr. iii. p. 272 (1859).
Teracolus Thruppi, Butler, P. Z. S. 1885, p. 770, pl. xlvii. fig. 10.
Teracolus Jamesi, Butler, *t. c.* p. 771.
Teracolus Jacksoni, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 336 (1890).

From Somaliland southwards to the Sabaki valley.

T. Jacksoni is the wet-season form, *T. Thruppi* the intermediate form, and *T. Heuglini* (=*D. Jamesi* ♂) the dry-season form.

43. *Teracolus evagore.*

Pontia evagore, Klug, Symb. Phys., Ins. pl. viii. figs. 5, 6 (1829).
Teracolus Yerburii, Swinhoe, P. Z. S. 1884, p. 441, pl. xxxix. fig. 12.
Teracolus saxeus, Swinhoe, *t. c.* pl. xl. figs. 1, 2.
Teracolus Swinhoei, Butler, *t. c.* p. 491.

Arabia.

T. Yerburii is the wet-season form, *T. Swinhoei* may be taken as either a yellow variety or an intermediate type, and *T. evagore* (=*saxeus*) is the dry-season form. Practically the whole of the forms are dry-season, but they represent the seasonal phases which occur in more variable climates. That *T. evagore* is the dry-season phase of *T. Yerburii* (and consequently *T. Heuglini* of *T. Thruppi*, and *T. nouna* of *T. daira*) is evident from the fact recorded (P. Z. S. 1896, p. 247) that one pupa produced from a batch of larvæ bred by Capt. Nurse produced *T. evagore* * and all the others *T. Yerburii.*

44. *Teracolus Emini.*

♂. *Teracolus Emini,* Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. vii. p. 47 (1891).

Ranges from Abyssinia to the Albert Nyanza, thence southwards through Nyasaland to Delagoa Bay, whilst we have one male of the dry-season form from the Godman and Salvin collection which is said to have been obtained as far south as Graham's Town.

But for the fact that the dry-season form of this species exactly resembles that of the wet-season on the upper surface, I should not have hesitated to regard it as an exaggerated development of the closely allied *T. eione.* The latter, however, appears to be strictly confined to Southern Africa.

45. *Teracolus eione.*

Anthocharis eione, Boisduval, Sp. Gén. Lép. i. p. 578 (1836).
Teracolus galathinus, Butler, P. Z. S. 1876, p. 142.

Ranges from the Cape to Delagoa Bay.

The wet and intermediate forms of this species are much alike on the upper surface, the latter, however, with ochraceous apex to primaries and entire surface of secondaries below, whilst the dry-season form is much more lightly marked above, more rosy and irrorated with brown below; next to *T. Emini* it is the most heavily marked dry-season form of its group, and notwithstanding its general resemblance on the upper surface to the wet-season forms of *T. phlegetonia*, I do not consider that we have enough evidence to sink it with its widely differing wet phase as a mere variation of *T. phlegetonia.* When it can be *proved* (instead of *asserted* without proof) that *T. Emini*, *T. eione*, *T. antigone*, *T. xanthus*, *T. interruptus*, and *T. glycera* are only variations (uninfluenced by locality or climate) of one and the same species, I shall be one of the first to accept the position. At present I regard it as extremely improbable.

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* He calls it *nouna,* but that is a mere trifling misidentification.

46. *Teracolus antigone.*

Anthocharis antigone, Boisduval, Sp. Gén. Lép. i. p. 572 (1836).
Anthocharis phlegetonia, Boisduval, *l. c.* p. 576 (1836).
Anthocharis delphine, Boisduval, *l. c.* p. 577 (1836).
Teracolus subfumosus, Butler, P. Z. S. 1876, p. 139, pl. vi. fig. 3.
Teracolus flaminia, Butler, *t. c.* p. 140, pl. vi. fig. 1.
Teracolus lycoris, Butler, *ibid.* (but not pl. vi. fig. 6).
Teracolus lyæus, Butler, *t. c.* p. 141, pl. vi. fig. 2.
Teracolus friga, Butler, *t. c.* p. 142, pl. vi. fig. 5.
Teracolus minans, Butler, Ent. Month. Mag. xviii. p. 229 (1882).
Teracolus coniger, Butler, *ibid.*

Ranges from Accra eastwards to the Albert Nyanza and thence southwards to Cape Colony.

When I described the above forms as distinct we had no examples of the very distinct wet-season phases from the south, nor was I aware of the variability or the seasonal distinctions which occur in *Teracolus*; therefore when I found half a dozen or more examples which seemed to correspond in the possession of certain characters in both sexes, I naturally supposed that I had different species before me. The Godman and Salvin collection, which was tolerably rich in examples of this species, has enriched our series, adding eight typical examples of *T. phlegetonia* (wet-season) from the Cape of Good Hope, also five examples of the variety *T. minans*=*coniger* from the Cape, as well as seven examples of the dry-season variety *T. delphine.* With our present series I am satisfied that the above synonyms represent one tolerably variable species. I cannot, however, believe that *T. antigone*, the wet-season form of which always has both the base and apex of the primaries bright lemon-yellow on the under surface, and which has a much narrower internal black stripe in all its forms, is identical with *T. eione* or *T. Emini.* Typical *T. antigone* has no internal stripe. Of the named forms, *T. phlegetonia* and *T. minans* are wet-season phases, *T. friga* is intermediate, and the remainder are variations of the dry-season form.

47. *Teracolus glycera.*

♂. *Teracolus glycera*, Butler, P. Z. S. 1876, p. 144.

Exact locality unknown. Type B. M.

It is possible that this may prove to be an aberrant intermediate-season form of *T. antigone*, for, although the inner margin of the orange apical patch is unbroken by the usual black marking, the primaries have the same yellow basal suffusion, and the other characters nearly correspond with those of that species.

48. *Teracolus xanthus.*

♂. *Teracolus xanthus*, Swinhoe, P. Z. S. 1884, p. 440, pl. xxxix. fig. 10.
Teracolus comptus, Butler, P. Z. S. 1888, p. 94.
Teracolus bifasciatus, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 336; ♀, Waterhouse, Aid, pl. clxxxix. (1890).

Ranges from Upper Egypt southwards to the Victoria Nyanza and Kilima-njaro, and thence to Nyasaland.

This is a northern and eastern development of *T. antigone*, usually smaller and more weakly marked on both surfaces, especially in the wet-season form. Only the more heavily marked examples of this form show any trace of the yellow basal suffusion on the under surface. At the same time it is possible that where the two forms meet they may interbreed, as is the case with some of the local races of birds.

49. *Teracolus metagone.*

Teracolus metagone, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 760 (1896).

East Africa.

This is a wet-season or intermediate form apparently nearly approaching *T. xanthus*, var. *bifasciatus* (=*comptus*); but without examining either a good figure or a typical example it would be rash to assert its identity with that species. It must, however, be borne in mind that the internal fascia on the primaries which occurs in the type specimens both of *T. bifasciatus* and *comptus* and the small transverse spot near the posterior extremity of the orange apical patch are not constant characters, but grade away to nothing even in our series.

50. *Teracolus interruptus.*

Teracolus interruptus, Butler, P. Z. S. 1871, p. 724; Lep. Exot. p. 115, pl. xliii. figs. 1, 2 (1872).
Teracolus lucullus, Butler, P. Z. S. 1876, p. 143, pl. vi. fig. 4.
Teracolus gelasinus, Butler, *t. c.* p. 143.

Appears to be confined to Angola and the neighbourhood of the Congo near its mouth. It is readily distinguished from the more northerly West-African type *T. antigone* by the absence of lemon-yellow at the base of the primaries below in any of its phases; the black internal bar is very faintly indicated in the wet-season form and wanting in the intermediate and dry forms.

51. *Teracolus agoye.*

Anthopsyche agoye, Wallengren, Lep. Rhop. Caffr. p. 15 (1857).
Anthocharis eosphorus, Trimen, Trans. Ent. Soc. ser. 3, vol. i. p. 523 (1863).
Teracolus Bowkeri, Trimen, *op. cit.* 1883, p. 358.
Teracolus zephyrus, Marshall, P. Z. S. 1897, p. 8.

South Africa.

I have carefully compared the various descriptions of this species with our examples, and have utterly failed to discover any reason for keeping them separate. Three examples from the Godman and Salvin collection of the wet-season phase obtained at Kimberley (two males and one female) agree remarkably well with Mr. Marshall's description: one worn and damaged male example in our series and one in the Hewitson collection of the intermediate phase, having the apex of primaries and the secondaries beneath creamy yellowish, are somewhat larger, with the black inner bordering of the apical patch continued almost to the first median branch; these are from Damaraland, and therefore should represent *T. agoye=eosphorus*; whilst a male in the Hewitson collection of the dry-season phase from the Transvaal has all the veins finely blackened above, the apical patch intermediate in size, with only its upper half black-bordered, its outer portion irrorated with greyish lavender, the apex of primaries and the secondaries below rose-pink. But for the comparative rarity of *T. agoye*, I am certain that Mr. Marshall would not have been so inconsistent as to regard the very slight characters upon which he has separated it into three species as either likely to be constant or of the least importance. There are hardly any of the forms which he has associated under his *T. evagore*, *T. evippe*, and *T. achine* which do not differ more markedly from one another. He himself says of specimens which he calls *T. achine*: "The undersides are equally variable, ranging from the type with black neuration to a specimen in which there is no trace of black"; and, under his *T. phlegyas*: "the development of the black on neuration is such an eminently unreliable character in this genus." It is perfectly well known also that the width of the black inner edging of the apical patch and the black costal streak on the secondaries are far less reliable, that the white or creamy under surface is dependent upon season, and that the discocellular dots are most inconstant. What characters then remain?

52. *Teracolus niveus.*

Teracolus niveus, Butler, P. Z. S. 1881, p. 177, pl. xviii. fig. 1.
Teracolus candidus, Butler, *t. c.* p. 178, pl. xviii. fig. 2.

Socotra.

T. niveus represents the wet-season phase and *T. candidus* that of the dry-season; the latter is less heavily marked than the type, and the orange patch, instead of filling the apex of the primaries, is represented by an oblique pale orange subapical band of five spots, widest in the middle and narrowest at its lowest extremity.

53. *Teracolus aldabrensis.*

Teracolus aldabrensis, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 269, pl. viii. figs. 7, 8 (1895).

Aldabra.

This is a very distinct and singularly coloured species. Without seeing the type, I should judge that its nearest relation was probably my *T. niveus*, from Socotra. It appears to be a wet-season form.

54. *Teracolus evenina.*

Anthopsyche evenina, Wallengren, Lep. Rhop. Caffr. p. 12 (1857).
Anthopsyche deidamia, Wallengren, Wien. ent. Monatschr. iv. p. 35 (1860).
Callosune deidamioides, Aurivillius, Kongl. Svensk. Vet.-Akad. Förh. 1879, p. 45.
Callosune inornata, Westwood, in Oates's Matabeleland, p. 338 (1881).

Southern Africa as far west as Damaraland, eastwards as far as the Zambesi.

The seasonal forms of this species differ but little on the upper surface; the dry-season male, however, has slightly less black on the inner margin and on the inner edge of the orange apical patch. *C. deidamioides* is the dry-season form.

55. *Teracolus casta.*

♂. *Callosune casta*, Gerstaecker, Arch. für Nat. 1871, i. p. 357; Van der Decken's Reisen in Ost-Africa, iv. 2, p. 365, pl. xv. figs. 1, 1 *a* (1873).
♂. *Teracolus sipylus*, Swinhoe, P. Z. S. 1884, p. 444, pl. xl. figs. 10, 11.
Teracolus callidia, Grose Smith, Ent. Month. Mag. xxiii. p. 32 (1886).

Ranges from Zanzibar south-westwards to Nyasaland and north-westwards to the Victoria Nyanza.

The seasonal variation of this species is considerably more marked than in the southern *T. evenina*; *T. sipylus*, the extreme wet-season form, is usually distinctly larger than the wet-season form of *T. evenina*, and always has all the dark markings much heavier, the black marginal spots of the secondaries being connected by grey scaling into a continuous or partly confluent border and frequently preceded by a lunulated greyish submarginal stripe. Even Mr. Trimen, who states that the two species are inseparable, is constrained to admit that *T. sipylus* is "somewhat more heavily marked." *T. callidia* chiefly differs from the latter in having the secondaries below "brownish-white," and is probably an intermediate phase between the wet- and dry-season forms; the dry-season form is *T. casta,* which is far more lightly marked than any South-African example of *T. evenina.* It is true that in Gerstaecker's figure and in our single example the male has a white under surface; but this is often the case with individuals of the dry-season phase in other species of the genus, as, for instance, in those examples of *T. dedecora* (the dry-season form of *T. eupompe*) to which Felder gave the name of *T. theopompe.*

Did intergrades between *T. evenina* and *T. casta* exist, one would be bound to regard them as one species; but the supposed intergrades prove to be nothing of the kind when examined with a view to seasonal variation, and the two species remain as representative localized forms.

56. *Teracolus Carteri.*

Teracolus Carteri, Butler, Ent. Month. Mag. xviii. p. 227 (1882).
Teracolus laura, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 441 (1890).

Ranges along the West Coast of Africa from Senegambia to Accra, and thence across the continent eastwards to the Albert Nyanza.

Of this species I have only seen wet and intermediate phases. If a dry-season form occurs it should be looked for in Central Africa. Both types of the species belong to the wet-season form.

This may be regarded as a heavily marked development of the more widely distributed *T. isaura*, like which species it has the basal suffusion softly diffused, instead of almost uniform in tone with the blackish internal spot on the primaries. The wet-season form, however, is much larger than *T. isaura*, much more heavily bordered with black in both sexes, and with a black inner edging to the apical orange patch in the male. The intermediate form is as heavily bordered as the wet phase of *T. isaura*, whilst both wet and intermediate forms have the wings on the under surface heavily black-veined below, a character extremely rare in *T. isaura.*

57. *Teracolus isaura.*

Anthocharis isaura, Lucas, Rev. et Mag. de Zool. p. 424 (1852).
Teracolus helle, Butler, P. Z. S. 1876, p. 149.

North Africa, from Upper Egypt to the White Nile and Abyssinia.

This species, regarded as a whole, is smaller and less heavily black-bordered than *T. Carteri*; the wet-season form has the veins below tipped with black, but it is most unusual even for the female to have them wholly blackened; the orange apical patch on the under surface of the primaries is much smaller and more diffused, and the orange markings on the secondaries are usually weaker. Both types belong to the wet-season phase, from which the intermediate form only differs in its more feeble black bordering, and on the underside in the less pronounced black tips to the veins; the dry form is still more weakly marked, without any black tips to the veins in the male, the female below being suffused with buffish salmon; it is possible that the male may sometimes have a rosy tinge below, but our examples do not show this dry-season character (which is not invariable).

58. *Teracolus antevippe.*

Anthocharis antevippe, Boisduval, Sp. Gén. Lép. i. p. 572 (1836).
Anthocharis zera, Lucas, Rev. et Mag. de Zool. p. 423 (1852).
Teracolus subvenosus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

Ranges from Senegal (where it appears to be rare) across the continent (to Abyssinia *, according to Lucas), south-eastwards to the Albert Nyanza, the Victoria Nyanza, Kilimanjaro, and thence still eastwards to Zanzibar.

Although related to *T. isaura,* this species appears to me to hold its own; it is much more variable than *T. isaura,* frequently showing a black internal stripe on the upper surface of the primaries and an imperfect black inner edging to the orange apical patch: the female in all its phases is much more heavily marked with blackish basal clouding and still blacker internal stripe on the primaries; the borders and subapical bar are also blacker than is usual in *T. isaura,* and the angular band on the secondaries more strongly defined; the veins on the under surface of the wings are either black externally (*T. subvenosus*), but never connected with a black marginal line as in *T. isaura*, or are merely dusky towards the tips (*T. antevippe*): the dry-season form (*T. zera*) has the under surface suffused with creamy pink, and is the least heavily marked type on the upper surface.

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* I believe, however, that Lucas confounded with it the males of *T. helle* (the dry-season form of *T. isaura*).

Strictly speaking, the males of this species, without any trace of the blackish internal stripe on the upper surface (typical *T. antevippe*), should perhaps be regarded as an intermediate phase between the wet- and dry-season forms, the wet form being represented by *T. subvenosus*.

59. *Teracolus ithonus.*

Teracolus halyattes ♀, Butler, P. Z. S. 1876, p. 145, pl. vi. fig. 8 (part.).
Teracolus ithonus, Butler, *t. c.* p. 146, pl. vi. fig. 7.
Teracolus harmonides, Butler, *t. c.* p. 146.
Teracolus hippocrene, Butler, *t. c.* p. 147.
Teracolus ignifer, Butler, *ibid.*
Teracolus hyperides, Butler, *t. c.* p. 149.
Teracolus hero ♂, Butler, *t. c.* p. 150, pl. vi. fig. 12 (part.).
Callosune damarensis, Aurivillius, Œfv. Ak. Förh. xxxvi. 7, p. 46 (1879).
Callosune Haevernickii, Staudinger, Exot. Schmett. p. 45, pl. xxiii. (1884).

Ranges from Kaffraria to Swaziland.

This may be regarded as the Southern representative of *T. antevippe*. It is much less heavily marked with black above, and, excepting in the male of the wet-season form (*T. hero* ♂), is more or less densely irrorated with brown scales on the under surface; even in this form the internal streak of the primaries and costal streak of the secondaries are incomplete. Two forms of all the phases occur, those of the wet and intermediate phases chiefly differing in size, having the under surface of the secondaries white, densely irrorated with brown; those of the dry-season form, however, are less alike; the larger form (*T. ignifer*=*damarensis*) has the under surface of the secondaries and apex of primaries rose-pink, finely irrorated with greyish brown in the males, somewhat more sandy in colouring, with the usual transverse banding in the females, the smaller form (*T. ithonus*=*harmonides*=*Haevernickii*) differing from the latter in the deeper more sandy colouring of the under surface, with coarse transverse striation rather than irroration. The forms may be summarized as follows:—

Wet-season.	Intermediate.	Dry.
T. hero (large).	Unnamed (large).	*T. ignifer* (large).
T. hippocrene.	*T. hyperides* ♀ (small).	*T. ithonus* (small).
Syn. *hyperides* ♂ (small).		*T. harmonides* (starved).

The female wrongly referred to *T. halyattes* is referable to typical *T. ithonus* (the smaller dry-season form).

60. *Teracolus achine.*

Papilio achine, Cramer, Pap. Exot. iv. pl. cccxxxviii. E, F (1782).
Teracolus simplex, Butler, P. Z. S. 1876, p. 148.

Ranges from the Cape to Natal, the Transvaal, and apparently northward as far as Nyasaland.

The wet and intermediate forms of this species have a well-defined internal stripe on the upper surface of the primaries; the apical patch in all the phases is bright vermilion, with a crimson tinge, but on the under surface the subapical orange bar is weak and diffused; in the intermediate and dry-season forms the under surface of the secondaries is irrorated and striated with grey upon a pale pink ground; the dry-season form (*T. simplex*) differs in having no internal blackish stripe on the primaries and no costal stripe on the secondaries of the male, and in the feebleness of all the other blackish markings on the upper surface.

Subspecies *Teracolus Trimeni.*

Teracolus Trimeni, Butler, P. Z. S. 1876, p. 150.
Callosune ramaquebana, Westwood, in Oates's Matabeleland, p. 341, pl. E. figs. 5, 6 (1881).
Teracolus fumidus, Swinhoe, P. Z. S. 1884, p. 442, pl. xl. figs. 4, 5.

A representative form of *T. achine* apparently confined to the Eastern side of Africa from the Transvaal northward as far as Manboia. The typical (wet-season) form is generally more heavily marked above with black than in *T. achine*, the male even sometimes showing traces of the angular black band on the secondaries characteristic of the female; on the under surface also, which is more creamy in tint than in *T. achine*, this angular band is sometimes indicated in saffron-yellow. *T. fumidus* (of which *T. ramaquebana* is the female) is merely a starved form of the subspecies. The dry-season form is less strongly marked than in that phase of *T. achine*, and is characterized by the usual rosy coloration on the under surface. Of our eighteen examples of this subspecies no less than sixteen were obtained in the Transvaal, nine of which were received in the Godman and Salvin collection.

T. ramaquebana, curiously enough, is referred by Mr. Guy A. K. Marshall to the synonymy of his heterogeneous "*T. evagore*," one of the most singular combinations of dry- and wet-season forms, of species belonging to widely different sections of the genus, which have been associated together since the days of Hewitson! It only shows how utterly impossible it is to write a correct synonymic paper upon any genus without first arranging the species, having due regard at the same time not only to seasonal variation, but to geographical distribution. Never since I first arranged the genus was it in such a perplexing state of chaos as during Mr. Marshall's few visits to it with a view to "clearing up" the synonymy. The natural result is that the "clearing up" has resulted in partial failure.

61. *Teracolus gavisa.*

Anthopsyche gavisa, Wallengren, Lep. Rhop. Caffr. p. 13 (1857).
Teracolus hero ♀, Butler, P. Z. S. 1876, p. 150, pl. vi. fig. 12 (part.).
Teracolus subvenosus ♀, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

Ranges from Natal to the Victoria Nyanza along the eastern littoral.

This species differs from *T. achine* in its much bolder marking in all its seasonal phases, the reduction of the crimson apical patch on the primaries of the males, and the well-defined black veining on the under surface of the wet-season form. "*T. subvenosus* ♀" is a typical female of *T. gavisa*, but "*T. hero* ♀" a singularly heavily marked and buff-tinted female of the intermediate phase.

I should regard *T. gavisa* as at least subspecifically distinct from *T. achine,* at any rate until it has been proved by breeding to be a mere varietal development of that species. It can always be easily distinguished in all its phases.

62. *Teracolus omphale.*

Pieris omphale, Godart, Enc. Méth. ix. p. 122 (1819).
Anthocharis theogone, Boisduval, Spec. Gén. Lép. i. p. 575 (1836).
Anthopsyche procne, Wallengren, Lep. Rhop. Caffr. p. 323 (1857).
Teracolus omphaloides, Butler, P. Z. S. 1876, p. 151.
Teracolus corda, Möschler, Verh. zool.-bot. Ges. Wien, xxxiii. p. 278 (1884).
Teracolus complexivus, Butler, P. Z. S. 1885, p. 770.

Ranges along the eastern side of Africa from Somaliland to the Cape.

T. omphale is a very variable species, the most heavily marked of the wet-season forms occurring in Nyasaland, where the marginal spots on the upper surface of the secondaries frequently unite into a broad continuous border; the discal black belt on these wings in the male varies enormously, sometimes broad from abdominal margin to outer border, sometimes slender, sometimes barely indicated. In the intermediate phase (*T. omphaloides*=*complexivus*), which has a dry-season under surface, the discal black belt is either barely indicated or wholly absent. *T. corda* is merely a starved variety of the male of this phase. *T. theogone*=*procne* is the extreme dry-season form, in which the black discal belt of the male has wholly disappeared and the internal stripe on the primaries nearly so, whilst the female is much less heavily marked than in the wet-season, and is sometimes yellow, flushed with orange above; the under surface of the dry-season form is very rosy and irrorated with clay-brown.

63. *Teracolus exole.*

Anthocharis exole ♂, Reiche, Ferr. & Gal. Voy. Abyss. pl. xxxi. fig. 4 (1849).
Anthocharis eurygone (?), Lucas, Rev. et Mag. de Zool. 1852, p. 341.
Anthopsyche acte, Felder, Reise der Nov., Lép. p. 187 (1865).
Anthopsyche roxane, Felder, *l. c.*
Teracolus hybridus, Butler, P. Z. S. 1876, p. 152.

Ranges down the east coast from the Sabaki valley to the Cape.

It is perhaps only an emphasized form of *T. omphale*, from which it chiefly differs in the greater development of black on the upper surface, even the dry-season phase having a distinctly wet-season pattern above. The female figured by Reiche as that sex of *T. exole* is *T. antevippe*. *T. acte* of Felder is the true female (wet-season form), *T. roxane* is a female of the intermediate phase, and *T. hybridus*, which Mr. Marshall places as an intermediate phase of *T. evippe*, is the dry-season form. *A. eurygone* answers best to the wet-season form of *T. exole*, but the locality "Coast of Guinea" is rather against this identification.

64. *Teracolus pyrrhopterus.*

Teracolus pyrrhopterus, Butler, P. Z. S. 1894, p. 575, pl. xxxvi. figs. 8, 9.

Apparently confined to the vicinity of Mount Kenya: two specimens (the types) not being ticketed with exact locality, I supposed them to be from the Sabaki valley; the same was the case with three examples of the wet-season form, but others are labelled Thegu and Thagana. Guaso Thegu is a gorge to the west of Mount Kenya, and Thagana appears not to be far off.

The wet-season form of this butterfly resembles small and lightly marked examples of *T. omphale* on the upper surface, but below it inclines to pink rather than cream-colour in tint, and this is especially the case with the discal stripe on the secondaries, whilst the subapical patch on the primaries is bright brick-red, as in the brightest examples of *T. theogone* (the dry-season form of *T. omphale*). The intermediate phase has the black banding of the upper surface still weaker, and below the subapical patch on the primaries and the discal stripe across the secondaries are sharply defined and very vivid upon a creamy ground-tint; the fringes rosy: the (typical) dry-season form retains the black internal stripe on the primaries, which is absent in males of *T. theogone*, and still shows a trace of the discal stripe on the secondaries; the apex of primaries and the secondaries below are bright rosy, the former with diffused bright brick-red subapical patch, the latter with the discal stripe varying from brick-red to gravel-brown.

I cannot agree at all to Mr. Marshall's arbitrary decision that this localized form is inseparable from *T. omphale*, no examples of which that I have ever seen in the slightest degree resemble its dry-season phase. That *T. pyrrhopterus* and *T. omphale* had a common origin will not be disputed, but that they are now distinct I firmly believe.

65. *Teracolus evippe.*

Papilio evippe, Linnæus, Mus. Lud. Ulr. p. 239 (1764).
Papilio arethusa, Drury, Ill. Exot. Ent. ii. pl. xix. figs. 5, 6 (1773).
Papilio eborea, Cramer, Pap. Exot. iv. pl. ccclxii. figs. C, D (1782).
Papilio hanna, Herbst, Natursyst. Schmett. pl. cvii. figs. 5, 6 (1792).
Pieris amytis, Godart, Enc. Méth. ix. p. 123 (1819).
Anthocharis cebrene, Boisduval, Sp. Gén. Lép. i. p. 583 (1836).
Teracolus pseudocale, Butler, P. Z. S. 1876, p. 154, pl. vi. fig. 9.

On the west of Africa this species ranges from Sierra Leone to Old Calabar and the Cameroon Mountains; it reappears at the Cape, and extends up the east side of Africa as far as Natal. We have one almost typical example from the West Coast as far south as Loanda; therefore, although the species is represented in S.W. Africa by *T. ocale*, the latter can hardly be regarded as more than a climatic race. On the other hand, the northern *T. epigone* appears to be geographically separated from *T. evippe*, and, though nearly allied, must be regarded as a distinct species. *T. pseudocale* is a starved southern variety of the wet-season phase.

The females of the typical wet-season *T. evippe* vary considerably in ground-tint and in the character of the apical patch; the rarest form of the female is that which most nearly approaches the south-western race, with white ground-tint and the black apical patch of the primaries enclosing a clear orange arched band; a second less rare form has this band much reduced and less clear; then comes the *arethusa* of Drury (which has received the names of *eborea* (part.), *hanna*, *amytis*, and *cebrene*), in which the orange has almost disappeared from the apical patch; the remaining varieties agree with the latter in character, but are sulphur-yellow or bright ochre-yellow in ground-colour.

Race *Teracolus ocale.*

Anthocharis ocale, Boisduval, Sp. Gén. Lép. i. p. 584 (1836).
Teracolus loandicus, Butler, P. Z. S. 1871, p. 724; Lep. Exot. p. 91, pl. xxxiv. fig. 10 (1872).
Teracolus suffusus, Butler, P. Z. S. 1876, p. 152, pl. vi. fig. 10.
Teracolus angolensis, Butler, P. Z. S. 1876, p. 154.

Occurs along the S.W. coast in the neighbourhood of Angola, and possibly further south.

The wet-season form of this race most nearly resembles *T. evippe*, var. *pseudocale*, but the female seems always to have the apical patch divided by a clear and often broad orange belt. *T. suffusus* was based upon an unusually dark and dwarfed example of the female. Wet, intermediate, and dry phases are all much alike on the upper surface, the dry form alone having much less black on the inner edge of the orange apical patch, giving it a totally different aspect from the southern dry phase of typical *T. evippe*, which has a fairly well-marked continuous black inner edging to the apical patch of the male; it is, however, possible that intergrades may occur between the two extremes. There appears to be no dry phase to *T. evippe* at or near Sierra Leone.

66. *Teracolus epigone.*

Anthopsyche epigone, Felder, Reise der Nov., Lep. p. 186 (1865).
Teracolus microcale, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 487 (1876).

Ranges from Upper Egypt to the White Nile and Abyssinia, and occurs also near Aden.

This species nearly resembles the Angolan *T. ocale* in all its phases, but the male always has a well-defined black inner border to the orange apical patch on the primaries, whereas the female is less prominently marked above with black than in any form of *T. evippe*, the spot which terminates the internal blackish streak on the primaries being wholly absent, and even the basal blackish irroration being either much restricted or wanting. At the same time, if it could be shown that *T. evippe* extended across Africa northwards from the West Coast, I should be inclined to regard *T. epigone* as a mere climatic race; but there seems to be no evidence whatever upon which to base such a decision, and therefore, in spite of its affinity to the Angolan race of *T. evippe*, I am constrained to consider it a distinct species.

The argument on which Mr. Marshall bases his synonymy of *T. evippe* and *T. omphale*, which he regards as one variable species, is based upon the confusion which existed previous to its rearrangement in the drawers of those species in the Museum collection—a confusion largely due to the incorporation of accessions since the date of the first arrangement of the genus about the year 1876 or 1877. He says that in Eastern Africa *T. evippe* is "an intermediate seasonal form of *theogone-omphale*"; but this is certainly not the case, for *T. evippe* is essentially, in all its characters, a wet-season phase; nor does it appear to extend in the East further north than Natal.

[To be continued.]

Dec. 1897

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A Revision of the Species of Butterflies belonging to the Genus Teracolus, *Swains.* By Arthur G. Butler, Ph.D., F.L.S., F.Z.S., &c.

[Concluded from p. 473.]

67. *Teracolus Hildebrandti.*

Callosune Hildebrandti, Staudinger, Exot. Schmett. p. 45, pl. xxiii. (1886).

From Nyasaland northward to Uganda and eastward to Mombasa.

This species is certainly dimorphic in its wet and dry phases, having the apical patch on the primaries either dull ochreous or bright crimson; it is very closely related to the southern *T. Annæ*, but is, generally speaking, a slightly larger insect with a little less black about it, the female of the wet-season form clearer and more cream-tinted on the under surface of the secondaries. At the same time its dimorphic character is its best one, the crimson-tipped forms (especially the males) of the two butterflies being remarkably similar in every respect. It is curious that just when Mr. Marshall was stating that this species had "only been received from the basin of the Sabaki River," we were receiving a male of the dry-season form from Nyasa, completely proving the specific identity of this species with the crimson-tipped representative of *T. Annæ*, four examples of which from Nyasa stand in the Hewitson series, whilst the Godman and Salvin collection contained seven now transferred to the Museum series. An example of the dry-season form of this variety is recorded by Mr. Marshall in a footnote as *T. Annæ*; yet he professes to distinguish the two species partly by the black inner edging to the apical patch—a very unreliable character, which varies considerably in *T. Annæ* itself.

68. *Teracolus Annæ.*

Thestias Annæ, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857; Lep. Rhop. Caffr. p. 66.
Anthocharis Danaë, Hewitson (nec Fabr.), Gen. Diurn. Lep. pl. vii. fig. 3 (1847).
Teracolus cinerascens, Butler, Cist. Ent. i. p. 172 (1873).
Teracolus Wallengreni, Butler, P. Z. S. 1876, p. 157.
Callosune Wallengreni, Westwood, in Oates's Matabeleland, p. 341, pl. E. figs. 3, 4 (1881).
Callosune confusa, Westwood, *l. c.* p. 348 (1889).

Ranges from Natal to the Zambesi.

In its wet-season form this is the most heavily marked of all the crimson-tipped *Teracoli*. This form is the typical one, and was named by me as *T. cinerascens* in consequence of Pastor Wallengren's error in describing it as a *Thestias*; *T. Wallengreni*=*confusa* is the dry-season form; an intermediate form also occurs.

69. *Teracolus Walkeri.*

Teracolus Walkeri, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xiv. p. 403 (1884).

Elephant Bay, S.W. Africa.

This very distinct butterfly was obtained by Mr. J. J. Walker, R.N., about the year 1883. This ardent collector and enthusiastic entomologist appears only to have been able to secure dry and intermediate phases of the species.

T. Walkeri is, in some respects, intermediate in character between *T. Annœ* and *T. pseudacaste*, the primaries of the male above somewhat resembling the wet-season form of *T. Annœ*, but the secondaries, from their less heavily spotted border, perhaps approaching nearer to *T. pseudacaste*; on the whole, however, *T. Walkeri* is far nearer to *T. Hildebrandti* and *Annœ* than to *T. pseudacaste* and *eupompe*.

70. *Teracolus pseudacaste.*

Teracolus pseudacaste, Butler, P. Z. S. 1876, p. 156, pl. vi. fig. 11.
Teracolus phœnius, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 488 (1876).
Teracolus miles, Butler, *op. cit.* ser. 5, vol. xii. p. 105 (1883).

Ranges from the White Nile and Abyssinia southwards to Kilima-njaro.

My three supposed species were all based upon wet-season examples, *T. pseudacaste* being based upon examples obtained on the White Nile probably just after the rainy season, the male lightly but the female heavily marked with black above. *T. phœnius* and *T. miles* are both typical wet-season forms, the former being more heavily marked with black on both surfaces than the latter and showing less crimson in the apical patch, the lowest spot of which is extremely small. The black veining below is sometimes very heavy, especially in females of the wet-season phase, but in the intermediate phase it almost disappears, though in this species the tips of the veins are always blackened in all the phases.

Although the wet-season form of this butterfly and of the allied *T. eupompe* appear to occur together to the north of their range, they differ so markedly in all their phases that I should no more regard them as synonymous (as Mr. Marshall has done) than I should *Ganoris brassicæ* and *rapæ*. *T. pseudacaste* ranges due southwards, whereas *T. eupompe* appears to follow the north-eastern coast, crossing over from Somaliland to Aden.

71. *Teracolus eupompe.*

Pontia eupompe, Klug, Symb. Phys., Ins. pl. vi. figs. 11–14 (1829).
Anthopsyche theopompe, Felder, Reise der Nov., Lep. ii. p. 183 (1865).
Anthopsyche anteupompe, Felder, *t. c.* p. 184 (1865).
Anthopsyche dedecora, Felder, *ibid.*

Ranges from the White Nile and Abyssinia south-eastwards to Somaliland, and thence across the straits to Aden.

This species in all its phases can easily be distinguished from *T. pseudacaste* by the great reduction of all the black markings on the under surface of the wings, the subapical spots on the primaries and the discal spots crossing the secondaries being almost or wholly obliterated, whilst the red subapical stripe and the red discal spots on the under surface of the secondaries in the female are strongly emphasized. The wet-season form is *T. eupompe*=*anteupompe*; the intermediate phase is *T. theopompe*, having a dry-season upper surface, but a white under surface; whilst *T. dedecora*, in which the apex of primaries and the secondaries below are rosy, is the dry-season phase. The two latter undoubtedly fly together, and in Aden it is tolerably certain that all the phases emerge at the same time as mere variations, which only become seasonally fixed in a more variable climate.

72. *Teracolus dulcis.*

Teracolus dulcis, Butler, P. Z. S. 1876, p. 157, pl. vii. fig. 13.
Teracolus dirus, Butler, *t. c.* pl. vii. fig. 11.
Teracolus eboreoides, Butler, *t. c.* p. 158, pl. vii. fig. 12.
Teracolus immaculatus, Swinhoe, P. Z. S. 1884, p. 443.
Teracolus subroseus, Swinhoe, *t. c.* pl. xl. figs. 6, 7.
Teracolus alberta, Swinhoe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 356 (1890).

Appears to range from Karachi to Bushire; and one male in the British Museum series is said to have been obtained at Aden, but this I consider very doubtful.

As I do not admit the identity of *T. pseudacaste* with *T. eupompe*, still less can I agree to this purely Asiatic species being the same. As a rule, it may be distinguished at a glance by its narrower and internally arched apical carmine patch, but occasionally a male with a fairly broad patch does occur, though I believe never a female. Another point is that *T. dulcis* has the base of the primaries below more or less washed with sulphur-yellow, whereas *T. eupompe* and *T. pseudacaste* are uniformly pure white; the veins below are sometimes black-tipped, but never black throughout, and, as already hinted, the apical patch is carmine, with a faint lilac shot rather than crimson. The females vary much in the colouring of the apex in all three species.

The wet-season form is represented by *T. dirus* (=*eboreoides*); *T. immaculatus* is a variety of the same approaching *T. eupompe* in the partial obliteration of the spots on the under surface, although differing in the colouring of the apical patch and sulphur tinting at base of primaries below; *T. dulcis* is a starved wet-season form, *T. alberta* the dry-season form, and *T. subroseus* a starved dry-season form or the dry form of the dwarfed *T. dulcis*.

73. *Teracolus Danae.*

Papilio Danae, Fabricius, Syst. Ent. p. 476 (1775).
Papilio eborea ♀, Cramer, Pap. Exot. iv. pl. ccclii. E, F (1782).
Teracolus sanguinalis, Butler, P. Z. S. 1876, p. 158.
Teracolus Taplini, Swinhoe, P. Z. S. 1884, p. 444, pl. xl. figs. 8, 9.

Ranges throughout Wallace's Ceylonese subregion—that is to say, from Bombay to Madras and Ceylon.

This species is in some respects nearer to the African *T. pseudacaste* than to *T. dulcis*, there being no sulphur-yellow at the base of the primaries on the under surface of the males and the carmine apical patch being distinctly broader than in the latter species in both sexes; the heavy continuous black bordering to the secondaries in the wet-season form is characteristic of *T. Danae*, whilst even in the males of the dry-season form it is far more heavy than in the allied species. *T. Danae* is the wet phase, *T. sanguinalis* is intermediate, and *T. Taplini* dry, the last-mentioned having the usual rosy under-surface coloration.

74. *Teracolus fausta.*

Papilio fausta, Olivier, Voy. l'Emp. Oth. Atl. pl. xxxiii. figs. 4 *a*, *b* (1801).
Idmais faustina, Felder, Reise der Nov., Lep. ii. p. 190 (1865).
Teracolus rosaceus, Butler, P. Z. S. 1876, p. 134, pl. vii. fig. 6.
Teracolus oriens, Butler, *t. c.* fig. 7.
Teracolus solaris, Swinhoe (nec Butler), P. Z. S. 1884, p. 437, pl. xxxix. fig. 5.

The range of *T. fausta* appears to be from Syria and the Turko-Persian frontier, through Afghanistan, into North-western India, where it becomes slightly modified and exhibits fairly well-marked seasonal variation. The true *T. fausta* has a dry-season upperside and the male has a dry-season underside; but the underside of the female exhibits wet-season characters on the lower surface of the wings. The nearest approach to a wet-season form of *T. fausta* is represented by a pair received from Fao, barely distinguishable from the male of my *T. oriens.*

T. solaris of Swinhoe (and formerly of the Museum series), =*T. oriens* (part.), Butler, is the true wet-season form of India, and *T. rosaceus* the dry-season form; but so intimately is this connected with *T. faustina* and *fausta* through the Persian examples above referred to, that it cannot be regarded as a distinct species, but can only be spoken of as the Indian development of *T. fausta*; even as a race it could only be arbitrarily separated by restricting it to Indian examples. On the other hand, Mr. Marshall's action in placing the Arabian *T. vi* as a synonym of *T. fausta* shows want of care, or, perhaps, of discernment, in noting its entirely different wing-outline.

75. *Teracolus vi.*

Teracolus vi, Swinhoe, P. Z. S. 1884, p. 437, pl. xxx. figs. 6, 7.

Aden, Arabia.

This species is allied to *T. fausta*, to which it bears a general resemblance; it, however, differs in its shorter, broader wings, with more arched outer margin, in the much yellower tint of the under surface, from which the discocellular spots have almost wholly disappeared, whereas the discal markings, though soft and blurred, are distinctly discernible both in primaries and secondaries. *T. vi* is undoubtedly a dry-season form which has no other phases, and is as distinct a species from *T. fausta* as are *T. fulvia* and *T. tripunctatus.*

76. *Teracolus fulvia.*

Idmais fulvia, Wallace, Trans. Ent. Soc. 1867, p. 392, pl. ix. fig. 5.
Teracolus solaris, Butler, P. Z. S. 1876, p. 135.
Teracolus Palliseri, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. i. p. 418 (1888).

Khandesh, S.W. India. The type, in the Museum collection, is said to be from Scinde, but this is probably an error. Mr. Marshall has confounded *T. solaris* with *T. fausta* and *T. fulvia* with *T. tripunctata*; but all are easily separable. *T. solaris* is simply *T. fulvia*, being based upon Wallace's type of that species.

77. *Teracolus tripunctatus.*

♂. *Teracolus tripuncta*, Butler, P. Z. S. 1868, p. 221, pl. xvii. fig. 9.
♀. *Teracolus tripunctatus*, Butler, P. Z. S. 1880, p. 149, pl. xv. fig. 4.
Teracolus surya, Moore, Journ. As. Soc. Beng. lii. p. 45 (1885).

Probably occurs over the greater part of South India and at Trincomali in Ceylon. It is readily separable, both in its wet- and dry-season forms, from *T. fulvia* by the much blacker apical patch on the primaries enclosing three isolated spots of the ground-colour, instead of being divided by a belt of spots; the marginal spotting of the secondaries is also much heavier than in *T. fulvia* and the under surface of the dry-season form yellower and less rosy. We have fifteen examples in the Museum from Bombay and the Nilgiris on the west and from Ganjam and Ceylon on the east.

78. *Teracolus celimene.*

Anthocharis celimene, Lucas, Rev. et Mag. de Zool. p. 426 (1852).
Anthocharis amina, Hewitson, Exot. Butt. iii., *Anth.* pl. i. figs. 1–3 (1866).

Appears to range from Abyssinia to Swaziland, whence we have a dry-season male obtained by Mr. Buxton.

I cannot believe that *Anthopsyche pholoe* of Wallengren is identical with *T. celimene*; the description reads like that of a female, but does not agree with the female in the Hewitson collection. We have the typical wet-season form of male *T. celimene* from Lake Nyasa (G. & S. coll.); therefore Mr. Marshall's suggestion that the western *T. pholoe* is the dry-season form of the eastern *T. celimene* (of which we already have both wet and dry forms) seems far-fetched.

79. *Teracolus pholoe.*

Anthopsyche pholoe, Wallengren, Wien. ent. Mon. iv. p. 35 (1860).
Anthocharis phænon, Trimen, Trans. Ent. Soc. iii. 1, p. 522 (1863).

The range of this species, so far as at present known, is from Damaraland eastward to Lake Ngami. It seems probable that Wallengren described the female and Trimen the male; the two series of red spots upon which my friend relies as disproving the female character of *T. pholoe* are the chief evidence in its favour, for, as Trimen himself shows, the males of this group of *Teracolus* have the apical patch *purplish lake, violet-glossed* and *intersected* by a black streak, not, as Wallengren says, *black, with violet-glossed red spots in two rows.* The female of *T. præclarus* gives an indication of such a character, but has the marginal spots also red instead of yellow.

80. *Teracolus præclarus.*

Teracolus præclarus, Butler, P. Z. S. 1885, p. 769, pl. xlvii. fig. 7.

Somaliland.

This beautiful species is evidently a link between *T. pholoe* and *T. zoe*, although the latter is in many respects more nearly related to the *T. halimede* group. It is probable that other species of the *T. celimene* type still remain to be discovered. *T. præclarus* appears to be a dry-season form.

81. *Teracolus zoe.*

Anthocharis zoe, Grandidier, Rev. et Mag. de Zool. p. 272 (1867); Mabille, in Grand. Madag. pl. xl. figs. 3–5.

Madagascar.

In the ash-grey base and black veins to the primaries and orange costal stripe to the secondaries this species approaches *T. leo*. In other respects it is nearer to *T. præclarus*.

82. *Teracolus leo.*

Anthocharis leo, Butler, Ann. & Mag. Nat. Hist. ser. 3, vol. xvi. p. 397 (1865).

Appears to be confined to North-eastern Africa, from the White Nile to Somaliland, and southward as far as Kilimanjaro.

It is readily distinguishable from *T. halimede* by the orange patch on the primaries being restricted to below the first median branch and the outer dusky border only represented, even in the wet-season examples, by spots. The type of the species is, in my opinion, an intermediate form between the wet and dry phases. I have not yet seen what I should regard as an undoubted dry-season form, unless it be represented by a small example from Mr. Druce's collection (G. & S. coll.) in which the orange is carried a little above the first median branch, the base somewhat glistening and white, and the apical markings weak as in typical *T. leo*. This specimen is without locality.

83. *Teracolus halimede.*

Pontia halimede, Klug, Symb. Phys., Ins. pl. vii. figs. 12–15 (1829).
Pontia acaste, id. *l. c.* figs. 16, 17 (1829).
Pieris polycaste, Boisduval, Sp. Gén. Lép. i. p. 525 (1836).
Teracolus cœlestis, Swinhoe, P. Z. S. 1884, p. 435, pl. xxxix. figs. 1, 2 (1884).

Confined to Arabia.

T. acaste represents the wet-season phase, *T. halimede* the intermediate, and *T. cœlestis* the dry-season phase of the species; but they are none of them confined to seasons, but occur (as is the case with other species in very arid countries) as mere coexistent variations. If the species could be transferred to a variable climate, doubtless the varieties would become strictly seasonal forms, as is the case with other species of *Teracolus*. Our series of this species is very fine.

84. *Teracolus venosus.*

♂. *Idmais venosa*, Staudinger, Exot. Schmett. p. 43, pl. xxiii. (1885); ♀, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 759 (1896).

Mombasa.

This is a wet-season form somewhat resembling *T. acaste*, but entirely without the orange flush on the upper surface of the wings. It would not surprise me to find that in the dry season the male had a tint of orange and that the female resembled a washed-out *T. cœlestis*. However, this is mere conjecture. Mr. Marshall says that *T. venosus* comes closest to the *halimede* group. I would go a step further and say that it belongs to that group, for it differs in nothing but the absence of orange colouring.

85. *Teracolus heliocaustus.*

Teracolus heliocaustus, Butler, P. Z. S. 1885, p. 768, pl. xlvii. figs. 8, 9.

Somaliland.

Intermediate between *T. halimede* and *T. pleione*, being a little nearer to the latter, which it represents on the Somali coast. It is a dry-season form, varying much in the black markings of the upper surface.

86. *Teracolus pleione.*

Pontia pleione, Klug, Symb. Phys., Ins. pl. viii. figs. 7, 8 (1829).
Idmais miriam, Felder, Reise der Nov., Lep. ii. p. 190, pl. xxvii. figs. 3, 4 (1865).
Teracolus chrysomelis, Butler, Cist. Ent. i. p. 244 (1874).
Idmais eucheria, Mabille, Bull. Soc. Ent. Fr. (5) ix. p. clxxiv (1879); Grand. Madag. pl. xi. fig. 5 (1887).

White Nile and Arabia.

T. miriam (=*chrysomelis*) is the dry-season phase of *T. pleione*; but in Arabia both forms occur as mere varieties simultaneously and emerge on the same day from the same batch of pupæ. It would be interesting to know whether the forms are seasonally constant on the White Nile.

87. *Teracolus gaudens.*

Teracolus gaudens, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).

Abyssinia.

The type is a wet-season male, and for some time I held Mr. Marshall's opinion, that *T. arenicolens* from Arabia was clearly its dry-season form. This, however, I have now proved to be an error, based upon a false identification of *T. chrysonome*—an Arabian species and distinct from the Somali insect.

88. *Teracolus chrysonome.*

Pontia chrysonome, Klug, Symb. Phys., Ins. pl. vii. figs. 9–11 (1829).
Teracolus arenicolens, Butler, Ent. Month. Mag. xxi. p. 81 (1884).

Arabia and Nubia.

In the Godman and Salvin collection were four examples of typical *T. chrysonome* (received from Mr. Druce, who purchased them from the Kaden collection); these correspond closely with Klug's figures, and are undoubtedly the wet-season form of *T. arenicolens*. They differ from my supposed *T. chrysonome* from Somaliland in the much less defined markings upon an opaque pale sulphur ground on the under surface, and on the upper surface in the slightly more slender and sometimes imperfect blackish irregular stripe across the primaries; the males also with the basal white area chalky, much less suffused with ash-grey, and extending to the end of the discoidal cell.

89. *Teracolus helvolus.*

Teracolus chrysonome, Butler (not Klug), P. Z. S. 1885, p. 768.
Teracolus helvolus, Butler, P. Z. S. 1888, p. 94.

Somaliland southward to Mombasa and Kilima-njaro.

T. helvolus is the dry-season phase of the species; but it is doubtful whether it does not appear simultaneously with the wet-season phase. Our Somali specimens, however, were not taken together, the dry form having occurred in January and the wet form in April.

90. *Teracolus aurigineus.*

Teracolus aurigineus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 103 (1883).
Teracolus venustus, Butler, P. Z. S. 1888, p. 94.

From the Albert Nyanza eastwards to Mount Kenia, the Victoria Nyanza, and Kilima-njaro, and southwards to Nyasa.

We have a very fine series of wet-, intermediate, and dry-season examples of this species. *T. aurigineus* represents the wet and *T. venustus* the dry phase.

Race? *Teracolus Ansorgei.*

Teracolus Ansorgei, Marshall, P. Z. S. 1897, p. 13.

Somaliland.

Chiefly differs from *T. aurigineus* in the absence of the ashy whitish base to the primaries of the male; but, if examples from Gallaland are referable to the same species, this character must be variable.

91. *Teracolus Doubledayi.*

Idmais Doubledayi, Hopffer, Peters's Reise n. Mossamb., Zool. v. p. 363 (1862).
Idmais Hewitsoni, Kirby, Cat. Diurn. Lep. p. 498 (1871).
Idmais chrysonome, Doubleday and Hewitson (not Klug), Gen. Diurn. Lep. pl. vii. fig. 5 (1847).

Congo, Angola.

The dry-season form is small and suffused with vinous over the darker markings of the under surface, the bands across the secondaries being vinous brown instead of golden orange or cadmium-yellow.

92. *Teracolus rhodesinus.*

Teracolus rhodesinus, Butler, P. Z. S. 1893, p. 663.

Lake Mweru, Central Africa

I have only seen the type of this species (a wet-season male), but it is so markedly distinct from the allied *T. mutans* that I cannot for a moment entertain the notion of its being a form of that species. It differs not only in the slender discal band across the upper surface (which is partly obliterated), but in the creamy ochreous tint of the upper surface extending inwards almost to the base of the secondaries, in the paler sulphur tint of the apex of primaries and the secondaries on the under surface, as also in the strongly defined and more parallel inner angular band across the latter wings. In some of these characters it more nearly approaches *T. aurigineus*.

Mr. Marshall asserts that this butterfly combines the characters of *T. Hanningtoni* and *mutans*! I fail to see where *T. Hanningtoni* comes in.

93. *Teracolus mutans.*

Teracolus vesta, Trimen (not Reiche), South Afr. Butt. vol. iii. p. 160 (1889).
Teracolus mutans, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xix. p. 459 (1877).
Teracolus argillaceus, Butler, *ibid.* (and *T. vesta,* Staudinger, Exot. Schmett. i. pl. xxiii., 1884).

Ranges from Nyasa southwards to Natal, occurring on the Zambesi, in the Transvaal, and at Delagoa Bay.

After examining twenty-nine examples of this species, including some interesting varieties recently collected by Mr. Guy A. K. Marshall, I am unable to follow that gentleman in his decision as to the identity of the southern insect with the Abyssinian *T. vesta*; the latter, judging from the descriptions and the original illustration, is slightly larger and differs in the salmon-buff of the upper surface extending in the cell of primaries right up to the almost black basal suffusion, in the even heavier black border of the secondaries and the yellow suffusion on the interno-median area, in the less irregular and uniformly redder bands on the under surface of the secondaries, the inner and submarginal bands being also broadly and sharply defined. Most examples of *T. mutans* show very little blackish suffusion at the base of the wings on the upper surface; but Mr. Marshall, who seems to be one of the most energetic and indefatigable of collectors, has sent us several unusually heavily shaded examples, in which the basal suffusion is deep bluish ash-coloured, but far from approaching the grey-blackish tint of typical *T. vesta.* The more southern examples of *T. mutans* are considerably smaller than the Abyssinian species, but the Nyasa examples sometimes run it very close in expanse of wings.

T. argillaceus is the dry-season form of the species, and we have some very pretty intermediate examples from Delagoa Bay and Nyasa.

94. *Teracolus vesta.*

Idmais vesta, Reiche, in Ferr. Gal. Voy. Abyss., Ent. p. 463, pl. xxxi. figs. 7, 8 (1849).
Idmais velleda, Lucas, Rev. et Mag. de Zool. 1852, p. 428.

Abyssinia.

Both descriptions and the illustration of this species are taken from the wet-season form. Reiche's figures apparently represent a female. It is probable that the male will prove to be less black at the base of the wings above.

95. *Teracolus catachrysops.*

Teracolus catachrysops, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ii. p. 178 (1878).

East Africa, from the Sabaki valley southwards to Masasi.

The wet form alone of this species has hitherto been received. It is readily separable from *T. mutans* and *vesta* in the small size of the submarginal spots on the black external area, and in the white colour of these spots on the secondaries of the female; from *T. mutans* also in the greater distinction of tint between the orange ground-colour and yellow apical and external spots on the under surface of the primaries and the deep red bands on the under surface of the secondaries, and from *T. vesta* in the straighter character of these bands and the slenderness of the innermost one.

A female from the Sabaki valley has the ground-colour above entirely white, feebly tinted with sulphur-yellow, and the colouring below paler than usual.

96. *Teracolus Hanningtoni.*

♂ ♀. *Teracolus Hanningtoni*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 104 (1883).

♀. *Teracolus bipartitus*, Rothschild, Novit. Zool. i. p. 537 (1894).

From the Victoria Nyanza eastward to Witu.

This species may be distinguished at a glance from its nearest ally *T. catachrysops* by the minute discocellular spot on the primaries, the more tapering series of spots on the black external area of the secondaries, the minute subapical spots on the primaries, the yellower discal colouring on the under surface of these wings, and the dark veining of the same surface of the secondaries. Mr. Marshall states that Mr. Jackson's series shows the impossibility of separating these two species; but I have often been told similar things about other butterflies, and am not inclined to accept any such observation on trust, especially from a man who, though a good observer, sees no difference between the illustration of *T. vesta* and *T. mutans*, but speaks of both as "typical specimens" *.

97. *Teracolus amelia.*

Idmais amelia, Lucas, Rev. et Mag. de Zool. 1852, p. 428.

Abyssinia.

Although more nearly related to *T. Hanningtoni* than to any other species of the group, this butterfly differs from all in the much greater restriction of the ochreous colouring on the primaries of the male (which commences beyond the end of the cell), in the entirely different coloration of the under surface, the primaries being saffron-yellow on basal two fifths, very pale creamy yellow on the disk, and with the dark bands golden olive or yellow-brown, the two outer bands on the secondaries near together and arched rather than angulated (as in *T. vesta* as compared with *T. mutans*). From all the species excepting *T. Hanningtoni* it differs in the minute discocellular spot on the primaries. Only the wet-season form is known at present either of *T. Hanningtoni* or of this species.

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* I have recently examined Mr. Jackson's series, and had no difficulty whatever in assigning them to their proper species.

98. *Teracolus protomedia.*

Pontia protomedia, Klug, Symb. Phys., Ins. pl. viii. figs. 13, 14 (1829).

Ranges from the Albert Nyanza northward to Abyssinia and eastward through Somaliland to Arabia.

It is closely related to the preceding species and especially to *T. Hanningtoni*, but its superior size, bright uniform yellow colouring, black-veined primaries, less banded upper surface of secondaries, and lack of a subbasal band on the under surface of these wings, have saved its being regarded as a variety of *T. vesta*. These differences, though perhaps not greater than exist between *T. amelia* and *T. mutans*, are more readily grasped without effort.

The seasonal differences are well defined, the wet-season phase having the chief markings below smoky brown, partly veined with saffron-yellow; the intermediate form has these markings redder and with well-defined veining; the dry phase has them almost wholly bright reddish orange. At Aden all three types occur together as mere variations.

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A Revision of the Pierine Butterflies of the Genus Terias *from the Old World.*

BY

ARTHUR G. BUTLER, PH.D., F.L.S., F.Z.S., ETC.,
SENIOR ASSISTANT-KEEPER, ZOOLOGICAL DEPARTMENT, BRITISH MUSEUM.

A Revision of the Pierine Butterflies of the Genus Terias *from the Old World.*

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

THE genus *Terias* has always been a puzzle to Lepidopterists and probably will never be thoroughly understood until the whole of the species have been reared from the egg throughout the year and in all parts of the world where they exist. At the same time, the careful labelling and dating of collections in recent years and the study which has been devoted to this genus in India and Africa have thrown considerable light upon the relationship of the numerous forms which, even in my "Notes on the Genus *Terias*" (Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. pp. 212–225), I was obliged to regard, for want of evidence to the contrary, as distinct species.

The researches of Capt. E. Y. Watson, C. W. Barker, and G. A. K. Marshall have conclusively proved that many of the supposed species of the genus are either seasonal or varietal: the wet-season forms having the under surface of the wings white or yellow, usually with somewhat feeble markings, or even none at all; the dry-season forms either reddish in colour, sometimes with ill-defined markings, or with the ground-colour of the wet-season and sharply-defined markings, the primaries also with an oblique row of dots, a zigzag bar, or a large patch of chocolate at or near the apex—this form is also often characterized by dense dusky irroration of the under surface. In the transition from the rainy to the dry-season an intermediate form occurs. Variation, in the sense of simple inconstancy of pattern, chiefly affects the width of the borders on the upper surface, and, curiously enough, this inconstancy in some species is dependent upon season, whilst in others it occurs at all seasons. It is this puzzling inconsistency in the variation of the species which has been responsible for many of the synonyms in this genus, as well as for much confusion in the writings of the best intentioned workers respecting the geographical distribution of some of the commoner species.

The Museum series of Old-World *Terias* has, for many years, been the finest in existence; and the recent donation of the Godman and Salvin collection of these butterflies has rendered it so complete that, in combining and rearranging the two series in our cabinets, many new facts have come to light and a tentative revision of the synonymy has become practicable, but only breeding in every locality can finally decide whether or not this reduction of the species of the past goes too far or not far enough: in any case I offer it to Lepidopterists as what I conscientiously believe to be a step in the right direction.

The Museum collection of typical *Terias* at present occupies thirty cabinet drawers, nearly the whole of the forms described from the Old World being represented, and most of them in all their seasonal forms. It must, however, be noted that, as in *Teracolus*, those countries which have practically no wet season nevertheless produce the three phases of a species as coexistent varieties. It would therefore seem that existing variations have been adapted to the seasons, and not produced by them, as has been assumed.

SECTION I.

The most simple section of the genus is characterized by the absence of glandular or scale patches on the front wings of the males, and includes the *T. brigitta*, *nise*, *albula*, *agave*, *messalina*, *deva*, *harina*, *candida*, and *Desjardinsii* groups of the genus: some of these which are only found in the New World I shall not discuss in the present paper.

T. brigitta group.

Characterized by a tolerably regular blackish border to the costa and outer margin of the primaries above, this border not reaching the external angle in the females; the under surface of the dry-season form often largely suffused with rose-reddish or flesh-colour.

1. *Terias pulchella.*

Xanthidia pulchella, Boisduval, Faun. Madag. p. 20, pl. ii. fig. 7 (1833).

Mauritius and Madagascar.

The dry-season form has the apex of the primaries and the secondaries suffused with rose-reddish on the under surface. The species is represented in the Museum by eighteen examples.

We have in the Museum a single male of a species from Fwambo, Tanganyika, which (excepting in its much more rounded wings) bears a curious resemblance to *T. pulchella*; it is, however, destitute of markings on the under surface. I thought at one time that it might possibly be a very aberrant example of *T. regularis*, but it looks so utterly out of place with that species that I feel convinced it will prove to be a new thing; nevertheless I hesitate to name it until we receive further evidence.

2. *Terias brigitta.*

Papilio brigitta, Cramer, Pap. Exot. iv. pl. cccxxxi. B, C (1782).
Terias zoe, Hopffer, Ber. Verh. Ak. Berl. 1855, p. 640; Peters's Reise, Zool. v. p. 369, pl. xxiii. figs. 10, 11 (1862).
Terias candace, Felder, Reise der Nov., Lep. ii. p. 213 (1865).
Terias caffra, Felder, *l. c.*
♀. *Terias seruli*, Westwood in Oates's Matabele-land, p. 342 (1881).

Ranges from the Cape of Good Hope northwards to Abyssinia and westwards from Angola to Sierra Leone.

The wet form is *T. zoe*=*caffra*, the intermediate form is *T. candace*=*seruli*, and the dry form is typical *T. brigitta*: males both of the intermediate and dry forms seem to be very rare; it therefore seems possible that the females may live until the commencement of the wet season, or possibly they may take little part in the reproduction of the species. Among our ninety-two examples of *T. brigitta* only two males belong to the intermediate, and one to the dry form.

3. *Terias libythea.*

Papilio libythea, Fabricius, Ent. Syst. Suppl. p. 427 (1798).
Terias drona, Horsfield, Cat. Lep. E. I. C. p. 137, pl. i. fig. 13 (1829).
Terias lerna, Felder, Sitz. Ak. Wiss., math.-nat. Cl. xl. p. 448 (1860).
Terias senna, Felder, Reise der Nov., Lep. ii. p. 212 (1865).
Terias rubella, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 323 (1867).
Terias hainana, Moore, P. Z. S. 1878, p. 700.

The range of this species appears to extend from the Himalayas eastwards to Southern China and Hainan, southwards to Ceylon, and thence south-eastwards to Timor; we also have one example from Amboina.

The wet form is represented by *T. senna*=*lerna*, the intermediate form by *T. drona*, and the dry form is typical *T. libythea*=*rubella*=*hainana*: the latter has the fringes rosy and the border of the secondaries reduced to triangular spots; in the intermediate form these spots are confluent in the male, forming a dentated border *.

4. *Terias zoraide.*

Terias zoraide, Felder, Reise der Nov., Lep. ii. p. 213 (1865).
Terias australis, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 321 (1867).
Terias sinta, Wallace, *t. c.* p. 322.
Terias immaculata, Miskin, P. R. Soc. Queensl. vi. p. 258 (1889).

Ranges from Bourou southwards to Australia.

T. australis=*zoraide* is the wet form; *T. sinta*=*immaculata* the dry.

T. euterpe and *T. neda* of the New World appear to be best placed in this group, in spite of the somewhat different character of their under-surface markings.

T. harina group.

The wet-season forms differ from the dry in the much greater width of the outer blackish border to the primaries; between the two seasons this border is intermediate in width.

5. *Terias harina.*

Terias harina, Horsfield, Cat. Lep. E. I. C. p. 137 (1829); Hübner, Zutr. exot. Schmett. figs. 979, 980 (1837).

Ranges from N.E. India through Burma, the Mergui Archipelago and Andamans, Malacca, Java, and Borneo, eastwards to the Celebes.

The name *T. formosa* was probably first given to Hübner's figures of *T. harina* by the late Adam White, and thus appeared in a list of the species of this genus which I published (P. Z. S. 1871, p. 540) at a time when I had no perfect copy of Hübner's work for reference. In that list, oddly enough, I transposed the sexes—the type of *T. harina* being a female, that of Hübner's illustrations a male.

In the Philippines a fairly distinct race occurs, of which

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* *T. hainana* has a slightly narrower border to the primaries than *T. libythea*.

I have seen no extreme dry type: the wet form is larger than in *T. harina*, the blackish outer border extending to the secondaries even in the males, where it runs from the apex to beyond the third median branch, and in the females sometimes to beyond the first branch; the costal margin in this form is also much less arched than in *T. harina*: the intermediate form is normal.

6. *Terias butyrosa.*

Terias butyrosa, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 396 (1875).

Aru Islands.

I have only seen the dry-season form of this *Terias* and therefore have not sufficient evidence on which to conclude that it is a race of *T. harina*; it differs from the dry-season form of that species in the more uniform width and continuous character of the blackish border to the primaries.

T. candida group.

The species of this group do not appear to exhibit any appreciable seasonal characters; they also differ from the *T. harina* group in the fact that the females are not very variable in the same species: white is the characteristic colouring of the upper surface in all the species excepting those of the Solomon group, which have yellow females.

7. *Terias virgo.*

Terias virgo, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 328 (1867).

Aru Islands.

8. *Terias puella.*

Xanthidia puella, Boisduval, Voy. de l'Astr., Lép. p. 60, pl. ii. fig. 8 (1832).

Probably throughout the Halmaheira group; we have it from Waigiou, Batchian, Ternate, and Morty.

9. *Terias papuana*, sp. n.

Differs from the two preceding species in the more regular and slightly more concave inner edging of the black outer border to the wings, which runs farther back on the costa of the primaries; in the majority of the males this border is wider than in either *T. virgo* or *T. puella*, and in the females it is invariably wider than in *T. virgo*: the expanse of wings varies considerably, 39 to 54 millimetres.

From Mysol through New Guinea to Cape York.

10. *Terias xanthomelæna.*

Terias xanthomelæna, Godman & Salvin, P. Z. S. 1879, p. 159.

New Ireland and Duke of York Island.

This species may chiefly be distinguished from the following by the width and opacity of the basal and abdominal brown suffusion, and in the generally more concave inner edge to the outer border of the primaries and the narrower border of the secondaries.

11. *Terias candida.*

Papilio candida, Cramer, Pap. Exot. iv. pl. cccxxxi. A (1782).

Amboyna and Ceram.

12. *Terias Woodfordi*, sp. n.

♂. Gamboge-yellow with black-brown borders, with tolerably regularly concave inner margins, that of the primaries considerably wider on the costa than in any other species of the group, though at the external angle no wider than in *T. candida.*

♀. Similar to the male, but lemon-yellow, more or less irrorated at the base of the wings with dusky scales. Expanse of wings varying from 34 to 53 millim.

Guadalcanar, Maleita, and Florida Islands (*Woodford*).

The whole of our sixteen examples of this species were received from Messrs. Godman and Salvin.

13. *Terias salomonis*, sp. n.

Differs in both sexes from the preceding species in the narrower external borders of both sexes. Expanse of wings 45 to 54 millim.

Fauro and Alù Islands (*Woodford*).

The eight specimens of this species in the collection were received from Messrs. Godman and Salvin.

T. Desjardinsii group.

The wet- and dry-season forms differ considerably: in the latter the dark border to the secondaries is reduced to a series of dots terminating the nervures; on the under surface also the apex of the primaries is often suffused with rose-colour, and two or three deep brown markings appear somewhat as in the *T. hecabe* section of the genus.

14. *Terias regularis.*

Terias regularis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).
Terias Oberthürii, Mabille, Bull. Soc. Zool. France, ii. p. 223 (1877).

From Abyssinia southwards to Nyasa, and on the west coast from the Congo northwards to the Niger.

This species has been confounded with the S.-African representative of *T. Desjardinsii* by Mr. Marshall; it is, however, widely distinct, the female especially differing in the typical (wet-season) form in its broad hind-wing border; both sexes also differ in their less angular wings, with far more regular arched inner edging to the border of the primaries. In the dry-season form the border of the secondaries is replaced by dots, but the markings on the under surface are as indistinct as in the wet-season form; the apex of the primaries being very delicately tinted with rose-pink.

15. *Terias Marshalli*, sp. n.

Terias Desjardinsii, Trimen & Marshall (not Boisduval).

Wings much more angular than in the preceding species, the inner edge of the outer border of primaries irregularly sinuated, most prominently on the upper radial and two median interspaces; the outer border of the secondaries usually narrower, always distinctly so in the female and most frequently reduced to a marginal series of spots in that sex; markings below better defined, but especially in the intermediate and dry-season forms, which show an additional irregular subapical brown dash on all the wings and a rusty flesh-coloured border to the primaries. On the upper surface the three tolerably well-defined seasonal types differ chiefly in the width of the dark outer border to the wings, that of the secondaries being reduced in the dry-season to a narrow dentated line in the male and a series of dots in the female. Expanse of wings 35 to 45 millim.

Ranges from the Albert Nyanza southwards to Kaffraria, and on the West Coast from Angola northwards to the Niger. (Fifty examples.)

16. *Terias Desjardinsii.*

♂. *Xanthidia Desjardinsii*, Boisduval, Faun. Madag. p. 22, pl. ii. fig. 6 (1833).
♀. *Terias aliena*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. v. p. 337 (1880).

Madagascar.

I believe that this species only has a dry-season form—

the male approaching nearest to the dry form of *T. Marshalli* on the upper surface, but without the rusty or rose-coloured border on the under surface: the female has a faint rosy tinting to the apex above and a more or less dusky ill-defined apical border; on the under surface this sex has both subapical dashes and the apex of the primaries rosy ochreous. The black-tipped white female figured by Mabille in Grandidier's 'Madagascar' does not belong to this section of the genus, but is a variation of *T. hapale.*

17. *Terias punctinotata.*

♀. *Terias punctinotata,* Butler, P. Z. S. 1895, p. 633, pl. xxxv. figs. 8, 9.

The male is bright lemon-yellow, with a black outer border to the primaries, regularly arched internally as in *T. regularis*; it is different from the latter in outline, the costal margin of the primaries being longer and the apex more acute; but for this fact and its much clearer (less deep gamboge) colour I should have concluded that it might be the dry-season form of *T. regularis*, that previously noted being the intermediate form.

18. *Terias mandarinula.*

Terias mandarinula, Holland, Ent. xxv. (Suppl.) p. 91 (1892); Proc. U.S. Nat. Mus. 1895, p. 242, pl. vii. fig. 5.

E. Africa.

I have not seen this species, but can only suppose that it must be allied to the preceding.

SECTION II.

The males characterized by the presence of a patch of thickened scales between the median and submedian veins towards the base of the primaries below and a corresponding subcostal patch on upper surface of secondaries.

This section contains the group to which *T. venata*, *herla*, and *Jægeri* belong, also *T. smilax* and one unnamed species from the New World.

T. herla group.

Characterized by more or less acutely-pointed primaries, the dry forms usually very ruddy below.

19. *Terias betheseba.*

Terias betheseba, O. Janson, Cist. Ent. ii. p. 272 (1878).
Terias hainana, Moore, P. Z. S. 1878, p. 700.

Yokohama and Hainan.

Our seven examples of this species all belong to the wet-season form, nor have I seen a dry form of this insect.

20. *Terias sana.*

Terias sana, Butler, P. Z. S. 1877, p. 470.
Terias hespera, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 214 (1886).

New Guinea to Northern Australia.

T. sana was described upon two small wet-season examples from New Guinea; *T. hespera* upon the dry form from N.E. Australia. The species is represented in the Museum by eleven examples.

21. *Terias venata.*

Terias venata, Moore, Cat. Lep. E. I. C. i. p. 65, pl. 2 *a*. fig. 2 (1857).
Terias santana, Felder, Reise der Nov., Lep. ii. p. 211 (1865).
Terias rama, Moore, P. Z. S. 1872, p. 566; Lep. Ceylon, i. p. 121, pl. xlvi. figs. 5, 5 *a* (1880–81).
Terias pallitana, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 48 (1877).

Ranges from the Himalayas southward to Ceylon and probably eastwards through North China, for we have it from Chusan Island and from the Philippines.

The seasonal (?) forms differ less than usual: *T. rama* is probably the best-marked wet type, *T. santana* intermediate, and *T. venata* (of which *T. pallitana* is the female) the dry; but, on the other hand, it is possible that, as seems to be the case in the closely allied *T. betheseba*, no differing dry form may exist, and the slight discrepancies in the pattern of the upper surface or the definition of the markings on the under surface may be partly local and have a subspecific value. The fact that we have the extremes from the Anamully Hills proves that they are not permanently separated as distinct species.

Two males in the Museum from China differ in having the female pattern on the upper surface of the primaries as in *T. læta*.

22. *Terias herla.*

Pieris herla, McLeay, King's Surv. Austr. ii. p. 460 (1827).
Terias lineata, Miskin, P. R. Soc. Queensl. vi. p. 251 (1889).

Northern Australia.

T. lineata is the dry-season form of the species.

23. *Terias læta.*

Terias læta, Boisduval, Sp. Gén. Lép. i. p. 674 (1836).
Terias Jægeri, Ménétriés, Cat. Mus. Petrop., Lép. i. p. 84, pl. ii. fig. 1 (1855).
Terias vagans, Wallace, P. Z. S. 1866, p. 357.

India and Burma.

Differs from *T. herla* chiefly in the more acute apex to the primaries. The wet-season form of the species is *T. vagans*, which the late Capt. Watson says "is possibly wrongly identified in the British Museum"; but, owing to the fact (overlooked by him) that we possess Wallace's type, it was not "possibly wrongly identified." The intermediate form is *T. Jægeri* and the dry form *T. læta.*

24. *Terias subfervens.*

Terias subfervens, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 278 (1883).

Japan, Southern Corea, and Eastern China.

I based my description upon the extreme dry-season form from Southern Corea, having incorrectly identified the wet and intermediate forms from Japan as *T. Jægeri.* The species may readily be distinguished in all its forms from *T. læta* by the much more prominent and acute apex to the primaries and the distinctly narrower and far more regular black border on the upper surface of these wings.

T. smilax group.

Characterized by the rounded apex to the primaries and far more irregular abbreviated external border to these wings. Donovan's figure is extremely slovenly and does not show this irregularity; indeed it far more nearly resembles a little species which we have from the Bahamas; nevertheless it has been generally admitted that it is intended to represent the intermediate form of the Australian species.

25. *Terias smilax.*

Papilio smilax, Donovan, Ins. New Holl. pl. xx. fig. 3 (1805).
Terias ingana, Wallace, Trans. Ent. Soc. 1867, p. 322; Butler, Cruise of the Curaçoa, p. 470, pl. xlix. fig. 3 (1873).
Terias parvula, Herrich-Schäffer, Stett. ent. Zeit. 1869, p. 78.
Terias varius, Miskin, Proc. Soc. Queensl. vi. p. 259 (1889).
Terias casta, Lucas, *op. cit.* vol. viii. p. 68 (1894).

Eastern Australia and Baudin Island.

T. casta=*ingana* is the wet-season form, *T. varius* apparently = typical *T. smilax* intermediate, and *T. parvula* the dry form.

SECTION III.

The basal portion of the median nervure of the primaries in the males up to the emission of the first branch edged with thickened scales having an opaque appearance when held to the light.

This section is the most perplexing in the genus and includes all the allies of *T. hecabe* and *T. rahel.*

26. *Terias floricola.*

Xanthidia floricola, Boisduval, Faun. Madag. p. 22, pl. ii. fig. 6 (1833).
Terias ceres, ♂, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 218 (1886).

Mauritius and Madagascar.

T. floricola is the wet-season form and *T. ceres* the dry; the female referred by me to *T. ceres* belongs to the following very closely related form, which may perhaps be only a race of the same species, possibly only a variety.

27. *Terias hapale.*

♀ ♀. *Terias hapale*, Mabille, Le Nat. ii. p. 99 (1882); Grand. Madag. pl. xxxii. figs. 6, 7.
♂ ♀. *Terias Boisduvaliana*, Mabille, *t. c.* p. 253, pl. xxxii. figs. 4, 4 *a*, 5.
♂ ♀. *Terias æthiopica*, Trimen, S. Afr. Butt. iii. p. 21 (1889).

Madagascar, Africa generally, Arabia.

T. hapale = *Boisduvaliana* is the wet-season form and *T. æthiopica* = *ceres* ♀ the dry-season form. We have forty-seven examples of this butterfly, and (apart from seasonal variation) they seem to be wonderfully constant, the females only varying in the length of the outer border of the primaries, which, in the variety referred to *T. Desjardinsii* by M. Mabille, is very limited.

28. *Terias anjuana.*

Terias anjuana, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 189 (1879).
Terias decipiens, Butler, *l. c.*

Island of Johanna.

T. anjuana is the wet-season form, *T. decipiens* is intermediate, and a small lemon-yellow male which I identified as the W.-African *T. brenda* may possibly be an aberrant dry-season form, but shows none of the characteristic markings on the under surface.

29. *Terias Bewsheri.*

Terias Bewsheri, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 190 (1879).
Terias chalcomiæta, Butler, *l. c.*
Terias dentilimbata, Butler, *l. c.*

Island of Johanna.

T. Bewsheri is the wet form and *T. chalcomiæta* and var. *dentilimbata* the dry.

There can be little doubt that this is merely an insular race of *T. senegalensis*, less subject to variation than the continental type.

30. *Terias leonis.*

Terias leonis, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 222, pl. v. fig. 6 (1886).

West Africa from Sierra Leone to the Gaboon.

A small species, perhaps doubtfully distinct from *T. senegalensis*, but apparently having no dry-season form; the typical (intermediate) form is more characteristically dissimilar from *T. senegalensis* than the wet form.

There are twenty-eight examples in the Museum series.

31. *Terias senegalensis.*

Terias senegalensis, Boisduval, Sp. Gén. Lép. i. p. 672 (1836).
Terias solifera, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xv. p. 396 (1875).
Terias bisinuata, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 485 (1876).
Terias orientis, Butler, P. Z. S. 1888, p. 71.
Terias Butleri, Trimen, S. Afr. Butt. iii. p. 23 (1889).

Africa generally, but apparently rare in the south.

T. senegalensis=*solifera* is the extreme wet form; typical *T. senegalensis* having the markings below very indistinct, whereas in *T. solifera* they are well defined: this difference, however, is common as a variation in the genus.

T. orientis=*Butleri* is a less heavily bordered intermediate form, and *T. bisinuata* the dry form, which, however, we have hitherto only received from Eastern Africa.

32. *Terias brenda.*

Terias brenda, Doubleday, Gen. Diurn. Lep. pl. ix. fig. 6 (1847).

Sierra Leone to the Gaboon on the west and the Albert Nyanza to Tanganyika on the east.

This species resembles the preceding in pattern in all its forms excepting that the secondaries are less frequently bordered with black above, being usually dotted at the ends of the nervures. It differs chiefly in colouring, the wings being bright lemon-yellow above instead of gamboge. The largest examples of *T. brenda* show a somewhat greater expanse of wings than the largest examples of *T. senegalensis*, but size alone is of little consequence.

33. *Terias anemone.*

Terias anemone, Felder, Wien. ent. Monatschr. vi. p. 23 (1862).
Terias mandarina, De Lorza, Lep. Jap. p. 18 (1869).
Terias Mariesii, Butler, Trans. Ent. Soc. 1880, pl. vii. figs. 1–6.
Terias hybrida, Butl. *l. c.* figs. 7–11.
Terias connexiva, Butl. *l. c.* figs. 12–15.

Japan and Chusan Island, round the south-eastern coast of China from Shanghai to Hong-Kong.

T. Mariesii is the wet-season form, *T. anemone, hybrida*, and *connexiva* intergrades, and *T. mandarina* the dry-season form.

The transitions from wet to dry affect both surfaces simultaneously in this species, and thus at once distinguish it from *T. hecabe* and *T. suava*, in which the upper surface varies enormously at all seasons. The wet form (*T. Mariesii*) differs from the parallel variety of the wet form in *T. suava* in the more abrupt costal termination of the apical patch on the upper surface. Our series of this species is represented by 127 selected examples.

34. *Terias Hobsoni.*

Terias Hobsoni, Butler, P. Z. S. 1880, p. 668.

S.E. Corea, Japan, the Chusan Archipelago, Eastern China from Hang-Chow southwards to Foo-Chow and Formosa.

It is possible that this may be a variation of the preceding species, in which the outer border is equally well marked on the primaries, but wanting on the secondaries: the dry form is unknown to me.

35. *Terias unduligera.*

Terias unduligera, Butler, P. Z. S. 1880, p. 668.

Foo-Chow and N. Formosa.

The dry form is quite unlike that of *T. anemone*, approaching closely to that of *T. hecabe*. It is possible that this may be inseparable as a species from *T. hecabe*, from which it differs much as *T. nicobariensis* does from *T. suava*; it does not, however, quite correspond with *T. hecabe* in pattern in any of its seasonal forms, and appears to be locally constant.

Cramer's *Pap. hecabe* (Pap. Ex. vol. ii. pl. cxxiv. figs. B, C) probably represents the intermediate form of *T. unduligera*.

36. *Terias hecabe.*

Papilio hecabe, Linnæus, Mus. Lud. Ulr. p. 249 (1764).
Terias blanda, Boisduval, Sp. Gén. Lép. i. p. 672 (1836).
Terias æsiope, Ménétriés, Cat. Mus. Petrop., Lép. i. p. 85, pl. ii. fig. 3 (1855).
Terias subdecorata, Moore, P. Z. S. 1878, p. 699.
Terias arcuata, Moore, *t. c.* p. 700.

South China from Hong-Kong to Tonkin, including the island of Hainan.

In this species the wet-season form appears to vary very little, but the intermediate and dry forms exhibit considerable variation in the width of the outer border of the primaries. *T. æsiope* is a dry form corresponding with the wet-season form (*T. hecabe*); in *T. subdecorata* the only difference of importance is in the much less angular upper inner margin to the apical portion of the outer border; in *T. blanda* the inner edge of the outer border is almost or often quite regularly arched, and *T. arcuata* appears to be the same thing with an intermediate character of under surface. The following, which may prove to be a further development of the dry-season form of *T. hecabe*, was also described from Hainan; but the Museum possesses only a pair, presumably of this species, from the Loo-choo and Madjico-sima Islands; therefore, for the present, I keep it separate.

37. *Terias attenuata.*

Terias attenuata, Moore, P. Z. S. 1878, p. 700.

Hainan; also ? Loo-choo and Madjico-sima groups.

It is of course possible that our examples, in spite of their resemblance to Dr. Moore's insect, may prove to be the dry form of *T. Hobsoni*; their habitat seems to render this more likely than that they should be a variation of the Southern Chinese species.

38. *Terias suava.*

Terias suava, Boisduval, Sp. Gén. Lép. i. p. 670 (1836).
Terias hecabeoides, Ménétriés, Cat. Mus. Petrop., Lép. i. p. 85, pl. ii. fig. 2 (1855).
Terias fimbriata, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 323 (1867).
Terias simulata, Moore, Lep. Ceylon, i. p. 119, pl. xlv. figs. 2, 2 *a*, 2 *b* (1881).

Terias excavata, Moore, P. Z. S. 1882, p. 252.
Terias irregularis, Moore, *t. c.* pl. xii. fig. 3.
Terias apicalis, Moore, *t. c.* p. 253, pl. xii. fig. 2.
Terias asphodelus, Butler, P. Z. S. 1883, p. 151, pl. xxiv. fig. 13.
Terias narcissus, Butler, *l. c.*
Terias Swinhoei, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 216 (1886).
Terias simplex, Butler, *t. c.* p. 217, pl. v. fig. 2.
Terias contubernalis, Moore, Journ. Linn. Soc., Zool. xxi. p. 46 (1886).
Terias patruelis, Moore, *t. c.* pl. iv. fig. 5.
Terias fraterna, Moore, *t. c.* pl. iv. fig. 6.
Terias Andersonii, Moore, *t. c.* p. 47, pl. iv. fig. 8.

India and Ceylon, Burma, and southward to Malacca, including the Mergui Archipelago.

This species well bears out Darwin's statement that common and widely distributed species vary most. *T. suava* (commonly confounded with the broader-winged and far less variable *T. hecabe* of S. China) exhibits more inconstancy than any other species of *Terias*, and consequently has received numerous distinctive names. As every gradation of upper-surface pattern, from the typical broad-bordered *T. suava* to the narrow-bordered *T. narcissus*, is represented at all seasons, it would seem to a superficial observer that many species were represented by the forms of this butterfly; when, however, it is found that these forms are not limited to locality and comprise a perfect transitional series, it becomes evident that they represent one extremely variable species.

In order to facilitate their identification I shall consider these intergrades as separate varieties, beginning with the most broadly bordered typical form and ending with those in which the border is reduced to its narrowest limit.

Var. 1.

T. suava=hecabeoides is the wet-season form, the intermediate form is unnamed; *T. simulata* is the dry-season form, from which *T. contubernalis* is practically inseparable.

Var. 2.

T. merguiana is the wet-season form, the intermediate form is unnamed; *T. excavata* is the dry-season form, from which *T. Andersonii* is inseparable.

Var. 3.

The wet and intermediate forms are both unnamed; *T. fraterna* is the dry form.

Var. 4.

The wet and intermediate forms are both unnamed; *T. purreea=patruelis* is the dry form.

Var. 5.

The wet and intermediate forms are both unnamed; *T. Swinhoei* is the dry form.

Var. 6.

The wet form is unnamed, the intermediate form is unknown to me; *T. asphodelus* and *irregularis* are small and large types of the dry form.

Var. 7.

The wet form is unnamed; *T. fimbriata* is the intermediate form, and *T. narcissus* the dry form.

Var. 8.

The wet and intermediate forms are unknown; *T. simplex* is the dry form.

Var. 9.

The wet and intermediate forms are unknown; *T. apicalis* is the dry form.

39. *Terias nicobariensis.*

Terias nicobariensis, Felder, Verh. zool.-bot. Ges. Wien, xii. p. 480 (1862).
Terias phanospila, Felder, Reise der Nov., Lep. ii. p. 209 (1865).

Andamans, Nicobars, Java, Sumatra, Flores (coll. Hewitson), Borneo, and the Philippines. We have a female apparently referable to the intermediate form of this species, but said to have been taken in Ceylon.

To my mind *T. nicobariensis* is more nearly related to *T. silhetana* than to *T. suava* (with which, under the incorrect name of *T. hecabe*, it has been associated by Indian workers).

T. phanospila was based upon old discoloured males from Java; we have exactly similar specimens from Horsfield's collection. This is the dry-season form of the species.

40. *Terias silhetana.*

Terias silhetana, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 324 (1867).
Terias citrina, Moore (not Poey), Lep. Ceylon, i. p. 119, pl. xlv. figs. 4, 4 *a* (1881).
Terias rotundalis, Moore, *t. c.* p. 120, pl. xlvi. figs. 1, 1 *a*, *b* (1881).
Terias uniformis, Moore, *l. c.* figs. 2, 2 *a*, *b* (1881).
Terias vallivolans, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 420 (1883).
Terias heliophila, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvi. p. 338, pl. viii. fig. 2 (1885).

Terias Templetoni, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 218 (1886).
Terias simulatrix, Semper, Reisen Arch. Philipp. ii. vol. v. pl. xli. figs. 7–9 (1891).
Terias tecmessa, De Nicéville, Journ. Asiat. Soc. Bengal, lxiv. p. 498 (1896).

Burma, Pegu, N.E., Central, and Southern India, Ceylon, Andamans, N.E. Sumatra, Philippines *.

The character by which the late Capt. Watson proposed to distinguish *T. silhetana* from other species of the *T. hecabe* group is that it has an extra black dot near the base of the discoidal cell on the underside of the primaries. Unfortunately this character is not always present, though usually so in the narrow-bordered forms of the species.

T. silhetana separates fairly easily into two types, the first with a broad border to the secondaries at all seasons, the second with a narrower border in the wet-season, which almost or quite disappears in the dry-season.

Broad-bordered type.

The wet-season form is unnamed; the dry-season form is *T. citrina* = *T. simulatrix* = *T. tecmessa* (the latter being the drier and commoner variation).

Narrow-bordered type.

The wet-season form is *T. rotundalis* = *vallivolans* = *Templetoni*; the intermediate form is *T. heliophila*; the dry-season form is *T. silhetana* = *T. uniformis*.

41. *Terias Moorei.*

Terias Moorei, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 216, pl. v. fig. 1 (1886).

Camorta.

The late Capt. Watson regarded this as an extreme variety of *T. silhetana* (to which, as my figure shows, it bears not the faintest resemblance), solely on the ground that the black dot, which he believed to be confined to *T. silhetana*, occurs in our two examples, although not in the same part of the cell. As a fact, the cell-markings on the under surface of the species of *Terias* are eminently variable both in number and position, sometimes on opposite wings of the same individual.

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* We have a female said to have been obtained at Afghanistan over fifty years ago; but this is probably an error.

42. *Terias kana.*

Terias kana, Moore, Journ. Linn. Soc., Zool. xxi. p. 48, pl. iv. fig. 9 (1886).
Terias toba, De Nicéville, Journ. Asiat. Soc. Bengal, lxiv. p. 496 (1896).

Mergui Archipelago and Sumatra.

An intermediate-season form (of which the wet and dry forms are unknown to me). Capt. Watson thought that *T. kana* might be the wet-season form of *T. sari*; but we have what I believe to be the wet form of (the race?) *T. sodalis* from Ceylon, and it agrees with the latter exactly in the pattern of the upper surface, whereas *T. kana* is more like a small broad-bordered *T. suava.*

43. *Terias curiosus.*

Terias curiosus, Swinhoe, P. Z. S. 1884, p. 508, pl. xlvii. fig. 3.

Karachi.

The late Capt. Watson regarded this as an aberration of "*T. hecabe,*" but to my mind it has far more the character of *T. sodalis*; it may be distinct from either, and (in the absence of evidence) I therefore leave it.

44. *Terias sari.*

Terias sari, Horsfield, Cat. Lep. E. I. C. p. 136 (1829).
Terias sodalis, Moore, Journ. Linn. Soc., Zool. xxi. p. 45 (1886).

Ceylon, Nilghiris, Burma, Mergui Archipelago, Malacca, Sumatra, Java, Borneo, Sulu Archipelago, Palawan.

The examples from the mainland and Mergui, as well as the wet-season examples from Ceylon, have usually a narrower border to the secondaries, though one example from Malacca has this border fairly broad; these would represent *T. sodalis.* The forms from Sumatra northwards to Palawan have this border somewhat broader and are typical *T. sari.* Both names were given to the dry-season phase.

45. *Terias sarilata.*

Terias sari, var. *sarilata,* Semper, Reisen Philipp. ii. v. pl. xii. figs. 10–12 (1891).

Davao, Philippines.

Only the dry form is known to me.

Var.? *mindorana.*

Two females. The outer borders of the wings above occupying from one third to two fifths of the wing-surface;

that of the primaries acutely angulated below costa, the bisinuation on the median interspaces more transverse and with diffused outer edge; a blackish-brown streak continuous with the border running inwards to a third of the distance from the base along the inner margin; the chocolate apical patch on the under surface narrower than in females of typical *T. sarilata*.

Mindoro. From the Godman and Salvin collection.

If males from Mindoro exhibit similar differences, this may be regarded as a distinct species; but our two females are not quite alike (as indicated in the above description). Both belong to the dry-season phase.

46. *Terias semifusca*.

Terias semifusca, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 222, pl. v. fig. 8 (1886).

Sumatra. Type coll. Hewitson.

Belongs to the intermediate seasonal phase.

47. *Terias bidens*.

Terias bidens, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 222, pl. v. fig. 7 (1886).

Sumatra. Type coll. Hewitson.

Is also an intermediate form.

48. *Terias latilimbata*.

Terias latilimbata, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 221, pl. v. fig. 5 (1886).

Sumatra. Type coll. Hewitson.

A wet-season form.

49. *Terias latimargo*.

Terias latimargo, Hopffer, Stett. ent. Zeit. 1874, p. 25.

Terias anguligera, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 224, pl. v. fig. 10 (1886).

Celebes and Flores.

We have the wet-season form in the Museum series and the wet and intermediate forms in the Hewitson collection.

50. *Terias diversa*.

Terias diversa, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 324 (1867).

Philippines.

This appears to be the species figured by Semper (figs. 15–17) as *T. hecabe*; his figs. 13 and 14 do not seem to me to be distinct from his *T. simulatrix,* differing markedly from all the seasonal forms of *T. diversa.*

51. *Terias sulphurata.*

Terias sulphurata, Butler, P. Z. S. 1875, p. 617.
Terias variata, Butler, *l. c.*
Terias hebridina, Butler, *t. c.* pl. lxvii. fig. 8.
Terias inanata, Butler, *l. c.*
Terias pumilaris, Butler, *t. c.* pl. lxvii. fig. 7.
Terias sinapina, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 355 (1877).
Terias lifuana, Butler, *l. c.*
Terias aprica, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 420 (1883).
Terias maroensis, Butler, P. Z. S. 1883, p. 368, pl. xxviii. fig. 2.
Terias laratensis, Butler, *t. c.* p. 369, pl. xxviii. fig. 3.
Terias photophila, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xiii. p. 196 (1884).
Terias phœbus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 221, pl. v. fig. 4 (1886).

Ranges from Northern Australia northwards to Timor Laut, Aru, and New Guinea, and thence eastwards to New Ireland, appearing just to touch the Solomons; more to the south it ranges eastwards to the Loyalty, New Hebrides, and Fiji Islands.

This species exhibits a more restricted variability than *T. suava,* which it doubtless replaces in Australasia; the mode of variation is, however, similar. Regarded as a whole it is a smaller type, never so heavily bordered or suffused with blackish as typical *T. suava* nor so narrowly bordered as *T. apicalis.*

The varieties with their seasonal forms are as follows:—

Var. 1.

The wet-season form is *T. photophila,* with the outer border slightly narrower in *T. hebridina,* the upper angle of the sinus rounded off and the border of secondaries very narrow or reduced to dots in *T. inanata* and *aprica* (the latter is larger than *T. inanata* and has the margin of secondaries dotted). The intermediate form of this variety is unnamed. The dry-season form is *T. maroensis=phœbus,* of which *T. sulphurata* and *variata* are narrower bordered examples, the latter small and with dotted margin to the secondaries.

Var. 2.

The outer border of primaries broad at apex, but narrow at external angle; the seasonal forms are unnamed.

Var. 3.

The outer border of primaries much narrower throughout. The wet-season form is *T. pumilaris* (starved) and *T. sinapina* (full-sized); intergrades between the two extremes are in the Museum series. The intermediate form is *T. lifuana* = *T. laratensis* (the differences very slight) and the dry form is unnamed.

52. *Terias brevicostalis*, sp. n.

Readily distinguishable from all species of this group by the short costal margin to the primaries and the more rounded outer margin; the apical portion of the external border is consequently narrowed, just as though its outer edge had been trimmed off; the subapical angle of this border is more obtuse than usual, the secondaries are subangulated at the end of the second median branch; the outer border of the secondaries is well-defined, regularly sinuated internally, but varies somewhat in width and length; the general colour of the male above is saffron-yellow and that of the female citron-yellow; the markings below are normal, but not very strongly defined in the wet and intermediate forms; the dry form is unknown to me.

Expanse of wings 41–47 millim.

Semão Island, Timor (coll. Hewitson), Wetter, (probably Bourou), Batchian, Ternate, and Gilolo.

The general aspect of the males is that of the *T. Desjardinsii* group rather than of the *T. hecabe* group.

53. *Terias biformis.*

♂ ♀. *Terias biformis*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xiii. p. 196 (1884).

♀. *Terias lacteola*, Distant, Rhop. Mal. p. 466, fig. 129 (1886).

♀. *Terias ada*, Distant, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 271 (1887).

Ranges from Nias through Borneo eastwards to Ternate and Batchian, extending south to Amboyna and Ceram, and probably crossing New Guinea, to reappear in the Louisiade and Solomon groups.

The males of this *Terias* seem to run very close to those of *T. sulphurata*, of which species I should be inclined to regard it as a variety but for the white or creamy colouring of the females. In the Solomon group this type of female seems to be abundant, whereas the yellow female of *T. sulphurata* seems to be extremely rare; from Amboyna again I have only seen white females. In the Solomon Islands the females would seem to be most prevalent between the wet and dry seasons, nor have I seen a single dry-season male.

T. biformis was based upon a male with dry-season upper surface and a typical wet-season female; the former has usually a very narrow outer border, and sometimes the base and edge of the inner margin are irrorated with dusky scales, so as to approach the least pronounced forms of the *T. rahel* group.

T. lacteola and *ada* were both based upon females, the first white, the second creamy or with a faint tint of sulphur; the outline of the border of the primaries and the dusky irroration of the upper surface are characters which vary much in this species. Our series of *T. biformis* is now represented by seventy-one examples.

The names *T. biformis*, *multifrons*, and *multiformis*, proposed by the late Mr. H. Pryer for *T. subfervens* and *T. mandarina*, were given in defiance of the law of priority, and, but for the fact that they have recently been quoted by a scientific worker, I should simply have ignored them, as I should the names ignorantly given in a story-book. Not only was the name *T. biformis* proposed in 1887 for a butterfly which Mr. Pryer believed to have several names already, but it was given as the name of two species which Mr. Pryer believed he had bred (and which a friend of his was satisfied he had not bred) from one another. Lastly, the name *T. biformis* was given in ignorance of the fact that it had already been employed in the same genus about three years and a half previously.

With regard to his *T. multifrons*, subsequently altered without comment to *T. multiformis*, Mr. Pryer believed that it included no less than ten forms, all of which he declared that he had bred from eggs laid by *T. mandarina*, although most of them never were seen in Japan, and one, at any rate, is a well-known West-African species. Subsequently Pryer extended the species to include what he called *T. læta* (meaning *T. subfervens*), the wet and dry forms of which he probably regarded as *T. læta* and *betheseba*, or *T. læta* and *Jægeri*, according to fancy.

When it is remembered that the *T. læta* group is characterized by entirely different male sexual marks from the *T. hecabe* group, the fact that Pryer believed he had bred one from the other invalidates the whole of his breeding experiments, proving them to have been far more careless than the positive assertions of this collector would fain constrain us to believe them.

54. *Terias indecisa*, sp. n.

♂. Gamboge-yellow; the primaries having the base blackish, the costal margin very narrowly grey, the apex and a narrow external border dark brown, trisinuated internally as in *T. gradiens*, with a slight widening at external angle, but without a trace of the internal border characteristic of the *T. rahel* group; secondaries with a dentate sinuate external border, a little broader than in *T. tilaha* and more diffused towards the anal angle: wings below slightly paler than above, with the characteristic markings of the *T. hecabe* group (wet-season) represented by brown scales and not strongly defined.

Expanse of wings 45 millim.

Batchian (*Wallace*).

This seems to be a link between the *T. hecabe* and *T. rahel* groups; its upper-surface pattern is characteristic of an intermediate or dry-season form, but that of the under surface proves it to be a wet-season form. This insect is so very distinct from any other described form that, although slightly discoloured with age, I am constrained to regard it as new to science.

T. rahel group.

The inner border of the primaries and sometimes the abdominal border of the secondaries more or less broadly bordered with deep brown; in some species these and the ordinary borders are so much extended as to occupy the greater portion of the upper surface, leaving only a patch of yellow on each wing, whilst in the females even these patches are sometimes irrorated with brown.

55. *Terias sinensis.*

Terias sinensis, Lucas, Rev. et Mag. de Zool. 1852, p. 429.

"China" (*Lucas*); Sulu Archipelago. ♂, B. M.

Our single example agrees well with the description. It approaches very near to the type of *T. gradiens* from Borneo, but differs in its slightly longer wings and narrower borders. It is a wet-season form.

56. *Terias gradiens.*

Terias gradiens, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvii. p. 223, pl. v. fig. 9 (1886).

Borneo, Sandakan.

Our male from Sandakan has the inner border of the primaries more equal in width than in the type. The wet-season form only is known.

57. *Terias tilaha.*

♀. *Terias tilaha,* Horsfield, Cat. Lep. E. I. C. p. 136 (1829).

Java and Borneo.

Our ten examples are quite uniform in character and belong to an intermediate-season phase. The greater size, much broader apical border of primaries, the more elongated sinus in the border on the lower median interspace, and the extension of the inner border so as to impinge upon the discoidal cell at its base render it next to impossible that this can be the intermediate form of the preceding species, for we know that the change from a wet- to a dry-season character in this genus is usually accompanied by a decrease in the dark borders of the upper surface, and never by an increase in their width. When any change in size takes place, it tends towards diminution of expanse in the dry season.

58. *Terias Nicevillei,* sp. n.

I believe this to be the *T. tilaha* of De Nicéville; it is the smallest species of the group; it differs in pattern from *T. tilaha* in the slightly more regular inner oblique edging to the apical border of the primaries, the slightly narrower outer border of the male secondaries and the broader border to those of the female; the latter sex is also much deeper in colour than in *T. tilaha,* being nearly as bright a yellow as the male; the under surface is similar to that of *T. tilaha.*

Expanse of wings 38 millim.

N.E. Sumatra (from Capt. E. Y. Watson's collection).

59. *Terias rahel.*

Papilio rahel, Fabricius, Mant. Ins. ii. p. 22 (1787).

Borneo.

This is the Bornean representative of *T. tondana,* from which it differs in having the pattern of the primaries more nearly like that of *T. tilaha* and the pattern of the secondaries nearly alike in both sexes; whereas the female of *T. tominia* differs widely from its male in all the wings. The abdominal border of the secondaries is less strongly marked than in *T. tominia.* This, again, is an intermediate form in the under-surface markings.

60. *Terias tominia.*

♀. *Terias tominia*, Vollenhoven, Mon. Pier. p. 66, pl. vii. fig. 4 (1865).
♂ ♀. *Terias tondana*, Felder, Reise der Nov., Lep. ii. p. 214, pl. xxvi. figs. 1, 2 (1865).

Menado, Minahassa. B. M.
A wet-season form.

In the Berl. ent. Zeitschr. vol. xlii. p. 8 (1897), Herr Frühstorffer indicates the existence of a new species allied to *T. tominia* from Lombock; for this he proposes the name of *T. lombokiana*.

61. *Terias talissa.*

♀. *Terias talissa*, Westwood, Trans. Ent. Soc. 1888, p. 469, pl. xii. figs. 1, 1 *a*.

Celebes, Minahassa. B. M.

The female (of which we have both wet and intermediate forms) differs chiefly from that sex of *T. tondana* in the narrower and more smoky-yellow belts on the wings; the male, however, is widely different, the yellow area on the primaries being reduced to a broad oblique belt and that of the secondaries bounded behind by the median vein. Considering the constancy of the species in this group, we have at present no grounds for supposing that *T. tominia* alone should vary to this extraordinary extent; therefore, in spite of the general similarity of the females and the fact that both types appear to occur in the same islands, they must, for the present at any rate, be regarded as different species.

62. *Terias celebensis.*

Terias celebensis, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 327, pl. vi. fig. 1 (1867).

Tondano, Macassar, Sula Islands.

Wallace gives the locality of his male as "Menado," but the only male from the Wallacean collection in Hewitson's cabinet is labelled "Tond." The female from the Sula Islands differs from that obtained at Macassar in having the outer half of the primaries black; it would be interesting to see whether this difference was constant. The male would be best described as having the primaries above like those of *T. sari* and the secondaries like those of *T. tominia*. All the specimens have an intermediate season character of under surface.

63. *Terias alitha.*

Terias alitha, Felder, Wien. ent. Monatschr. vi. p. 289 (1862).
Terias invida, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 418 (1883).

Philippines, Sula Islands.

I believe *T. alitha* to be the wet-season form, though the female shows an intermediate character of under surface, and *T. invida* the dry-season form, although the male does not differ on the under surface from that of the wet season, and is only separable by the reduced width of the black borders above. A very broad-bordered form occurs, of which we have six examples from Samboangan and Davao, which may possibly be distinct, as well as a pair similar to the last but with the yellow area of the primaries abbreviated. I dare not venture, without proof of their distinctness, to name these forms, all of which, if distinct, should have been named by Mr. Semper in his Butterfly Fauna of the Philippines ('Reisen im Archipel der Philippinen,' Band v.).

64. *Terias Lorquinii.*

Terias Lorquinii, Felder, Reise der Nov., Lep. ii. p. 209 (1865).

Macassar, Celebes.

A wet-season form.

65. *Terias zita.*

♂. *Terias zita*, Felder, Reise der Nov., Lep. ii. p. 210 (1865).
♀. *Terias zama*, Felder, *l. c.*

Celebes, Ternate.

The males in the Museum have a wet- and the female a dry-season character of under surface; excepting in colour they are alike in the pattern of the upper surface.

66. *Terias eumide.*

Terias eumide, Felder, Reise der Nov., Lep. ii. p. 214 (1865).

Celebes, Batchian, Amboyna.

We have seasonal types of this species; but in the *T. rahel* group generally there is something undecided about the various phases of the species, which makes one doubt whether the species of this group ever exhibit well-defined seasonal forms such as exist in all the other groups of the genus; possibly they may be in a transitional stage towards extinction, for I believe that they have not been developed by changes of temperature, but have simply been adapted to them, inasmuch as they are often all well-marked and emerge simultaneously in countries where practically no wet-season exists; but, on the other hand, in countries where the weather is more or less moist throughout the year the dry forms are either wholly absent or are extremely rare (probably only existing as reversional sports).

T. amplexa group.

In this group the outer borders are quite regular—that is to say, not widening towards the apex of the primaries, as in the extreme dry phases of the *T. hecabe* group.

67. *Terias amplexa.*

Terias amplexa, Butler, P. Z. S. 1887, p. 523 (with cut).

Christmas Island.

Our males are all of the wet-season type, and our single female of the dry-season, in the pattern of the under surface.

Febr. 1898

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A Revision of the Butterflies of the Genus Ixias.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

THE present genus is confined to the Old World, being found throughout India and Ceylon, Burmah, Siam, China, and south-eastwards to the Celebes and Timor.

Ixias in general aspect resembles certain groups of the genus *Teracolus*, but is readily distinguishable by the neuration, the first two branches of the subcostal vein in the primaries being emitted wider apart, the upper radial emitted from the subcostal vein well beyond the end of the cell (expressed in the recently adopted phraseology this would stand as "veins 6, 7, and 8 stalked"). In the secondaries the discocellulars are much more oblique than in *Teracolus*.

The seasonal variation of *Ixias* differs somewhat from that of *Teracolus*, nor is it quite consistent in its character throughout the genus. As a rule the wet form has heavy borders to the wings on the upper surface and scarcely any markings on the under surface (often only a black dot at the end of the discoidal cells and a spot at the external angle of the primaries), but in some of the species there appears to be no wet phase of marking and coloration, and in others the wet-season form shows dark spots on the under surface occupying the exact positions of the ocelloid markings characteristic of the dry season.

Group 1. (Type *I. venilia*.)

Apical two thirds of primaries above veined with black; under surface always showing dry-season markings; the only probable seasonal difference consisting in the width of the border of the secondaries on the upper surface; it is not, however, certain that this difference in the present group has a seasonal significance, though it is certain that it has no specific value, as hitherto supposed.

1. *Ixias Reinwardtii.*

Thestias Reinwardtii, Vollenhoven, Tijd. Ent. iii. p. 125 (1860); Monog. Pier. p. 50, pl. vi. fig. 1 (1860).

Lombock, Flores, and Laraut, near Timor. B. M.

We have nine examples in the Museum series and three in the Hewitson collection; one female from the Godman and Salvin collection is unusually black on the upper surface, the white markings on the apical area being very much reduced and those towards the apex obliterated.

2. *Ixias pulchrior*, sp. n.

♂. Allied to the preceding, but the ash-grey suffusion at the base clearer and more restricted, the disk (beyond the orange patch) sulphur-tinted; the discal interrupted stripe terminating above the third median branch, the outer border and blackened veins narrower.

The female differs more markedly, the white patches beyond the cell of primaries being washed with orange and widened and extended so as to be continuous with the white area below the cell; the border of the secondaries is also similar to that of the male, not widened and bordered with grey scaling as in *I. Reinwardtii.* The under surface of both sexes differs from the latter chiefly in being less marked with black, the general pattern and coloration being very similar.

Expanse of wings, ♂ 58–61, ♀ 64 millim.

Bali Island (*Wallace*). B. M.

There are four examples in the Museum series and two in the Hewitson collection.

3. *Ixias Piepersi.*

Thestias Piepersi, Snellen, Tijd. Ent. xxi. p. 31, pl. ii. figs. 1, 2 (1878).

Celebes.

Not in the Museum series. It is a curious insect, combining characters of *I. Reinwardtii* and *I. venilia*, so that it is difficult to know exactly where to place it in a linear series.

4. *Ixias Kühni.*

Ixias Kühni, Röber, Tijd. Ent. xxxiv. p. 287, xxxv. pl. iv. figs. 3, 4 (1892).

Wetter. B. M.

Three males bearing a manuscript name of Staudinger's were received in the Godman and Salvin series.

5. *Ixias venilia.*

♂. *Pieris venilia*, Godart, Enc. Méth. ix. p. 121 (part.) (1819); Lucas, Lep. Exot. pl. xxxvi. fig. 1 (1835).

♂ ♀, Java (*Horsfield*). B. M.

One of M. Godart's typical examples was identical with Wallace's *I. venatrix*.

6. *Ixias Vollenhovii.*

Thestias Vollenhovii, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 393 (1867).
Thestias venatrix, Wallace, *l. c.*
Pieris venilia, Godart, Enc. Méth. ix. p. 121 (part.) (1819).

Timor, Dili, Semão, Java. B. M.

Eleven examples in the Museum series and four in the Hewitson collection. *I. venatrix* appears to be the dry-season form and is linked to typical *I. Vollenhovii* by an example received in the Godman and Salvin series. Wallace wrongly gave Moulmein as the locality of his *I. venatrix*, supposing that "E. Indies" indicated one of the specimens so labelled from Archdeacon Clerk's collection; had either he or Capt. Watson looked up the register number this error would have been discovered and saved much perplexity.

7. *Ixias insignis.*

Ixias insignis, Butler, Cist. Ent. ii. p. 431, pl. viii. fig. 1 (1879).

♂, Formosa. Type B. M.

8. *Ixias balice.*

Thestias balice, Boisduval, Sp. Gén. Lép. i. p. 593 (1836).

♂, Java. B. M.

Group 2. (Type *I. flavipennis.*)

The ground-colour of all the wings above golden yellow.

9. *Ixias flavipennis.*

Ixias flavipennis, Grose-Smith, in Forbes's Nat. Wand. p. 275 (1885).
Ixias pyritis, Weymer, Stett. ent. Zeit. 1886, pl. i. fig. 4; 1887, p. 13.

Sumatra (*Major Fawcett*), two males. B. M.

Group 3. (Type *I. pyrene.*)

This is the largest and most perplexing group in the genus, and it is possible that I may not have sufficiently reduced the number of named species; this, however, is, I think, preferable to reckless sinking of forms which are locally constant under one heading. In the late Capt. E. Y. Watson's review of the Indian species it is difficult to comprehend his meaning; he regards the whole of the species of the present group as one; but he says:—"*I. pyrene* is very subject to both climatic and seasonal variation, and many forms have been named. Of these some are fairly distinct, and the males can be compared as below. . . . ."

Now it seems to me that to discriminate between "a distinct climatic form" and "a species" we must have a universally accepted definition of what a species is, which is impossible: therefore, to my mind, if a thing is distinct it ought not to receive the same name as that from which it is admitted to be distinct, for to give the same name to two distinct things is to stultify the very object aimed at in nomenclature.

In the present group the wet-season forms are usually almost unmarked below and the dry forms heavily speckled and ocellated, whilst the outer borders on the upper surface are, as a rule, considerably broader in the wet than in the dry forms, sometimes disappearing entirely from the secondaries of the latter.

10. *Ixias rhexia.*

♂. *Papilio rhexia*, Fabricius, Syst. Ent. p. 476 (1775); ♀. Butler, Cat. Fabr. p. 216, pl. i. fig. 5 (1870).
♀. *Papilio pirithous*, Fabricius, *t. c.* p. 483 (1775).
♀. *Ixias familiaris*, Butler, Trans. Ent. Soc. 1874, p. 432.

Ranges from Tibet through N.E. India into Burmah. Twenty-nine examples. B. M.

There are five examples in the Hewitson collection, one of which is a remarkable albino male, having a white instead of orange patch on the upper surface of the primaries.

11. *Ixias evippe.*

Papilio evippe, Drury, Ill. Exot. Ent. i. pl. v. fig. 2 (1773).
Ixias anexibia, Hübner, Verz. bek. Schmett. p. 95 (1816).

S.E. China and the Island of Hainan. B. M.

The Museum series consists of thirteen examples, and there is one specimen in the Hewitson collection. *I. anexibia* is the dry form and *I. evippe* the wet.

This and the preceding species have long been confounded, but the Chinese and Indo-Burmese forms differ somewhat. Taken collectively *I. evippe* runs somewhat smaller than *I. rhexia*, never attaining the expanse of wing which some of the wet-season examples of that species show; the form of the wings in *I. evippe* is also rounder and more regular, the orange belt on the primaries is distinctly broader and extends further back into the discoidal cell, its front edge is diffused instead of sharply outlined; the seasonal forms also differ less in size and in the width of the border on the upper surface of the secondaries than in *I. rhexia*.

12. *Ixias undatus.*

Ixias undatus, Butler, P. Z. S. 1871, p. 252, pl. xix. fig. 4.

Borneo. Ten specimens (all males). B. M.

There is also one male in the Hewitson collection. It is curious that the female does not come to hand.

13. *Ixias latifasciatus.*

Ixias latifasciatus (part.), Butler, P. Z. S. 1871, p. 252, ♂.

Tenasserim, Burmah. B. M.

We possess ten examples of this species, of which seven belong to the dry-season form and exhibit the heavily black striated under surface which seems peculiar to this species. The female which I figured is that sex of *I. verna* (a white-winged species), which fact probably confused the late Capt. Watson, who regarded the present species as a form of *I. pyrene* rather than *I. rhexia* (to which it is much more nearly related); also, not having taken special notes of the type specimens, he erroneously identified the wet form of the species as typical, and (not possessing the dry form of the male) naturally concluded that the species was based upon an extreme seasonal form of *I. pyrene*. The seasonal forms of *I. latifasciatus* hardly differ on the upper surface; the border varies slightly in width in examples both of the wet and dry forms, one of our wet-season males showing a rather narrower border to the secondaries than any of our dry-season examples. Apart from the ground-colour of the wings this species is not at all unlike *I. verna*.

14. *Ixias Birdi.*

♂. *Ixias Birdi*, Distant, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 351 (1883); Rhop. Mal. pl. xxvi. fig. 4 (1882–86).

♂. Allied to the preceding species, slightly smaller, with the orange belt on the primaries sharply defined and more golden in colour; the black border of the secondaries considerably narrower (about the width of that in *I. cingalensis*, but slightly wider towards anal angle); under surface clear lemon-yellow, marked as in the typical *dry-season* form of *I. latifasciatus*.

Expanse of wings 59 millim.

Dry form, ♂, Perak (*Townsend*); from G. and S. coll.

Although we only have one example of this species, I am quite satisfied of its distinctness. The type was a wet-season form.

15. *Ixias cingalensis.*

Ixias cingalensis, Moore, Lep. Ceylon, i. p. 126, pl. i. figs. 2, 2 *a* (1881).

Ceylon. B. M.

We have thirteen examples of this species, four of which are wet-season males and the remainder dry-season specimens of both sexes. The Hewitson collection contains four examples.

Capt. Watson extended the range of this species over Southern India and regarded *I. ihoda*=*I. kausala* as the dry form of the species; but the wet and dry forms of *I. cingalensis* are absolutely identical on the upper surface, nor does *I. kausala* invariably possess the character upon which Capt. Watson defined *I. cingalensis*, for he says:—"It can be separated at once from all other forms of yellow *Ixias* by the greater extent of the basal yellow of the fore wing, which spreads into the upper median interspace." In our specimens of *I. kausala* the "basal yellow" extends more, less, or not at all into the upper median interspace.

I. cingalensis can be picked out at sight from a crowd of nearly allied forms, but the distinction given above is useless as a guide; its chief peculiarity is the narrowness and angularity of the orange belt across the primaries combined with the sharply defined and perfectly straight inner edge of this belt from subcostal vein to first median branch.

16. *Ixias frequens.*

Ixias frequens, Butler, P. Z. S. 1880, p. 150, pl. xv. figs. 6, 7.
Ixias alana, Swinhoe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 357 (1890).

India generally. B. M.

Thirty-three examples, representing wet-, intermediate-, and dry-season forms; the males and sometimes the females of the dry form are smaller and with much narrower (though always well-marked) border to the upper surface of the secondaries.

17. *Ixias moulmeinensis.*

Ixias moulmeinensis, Moore, P. Z. S. 1878, p. 837.
Ixias meipona, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 296 (1887); Rhop. Exot., *Pieris* II., *Ixias*, figs. 4, 5 (1888).

Burmah. B. M.

We have thirty-three examples, representing wet-, intermediate-, and dry-season forms; the wet form is *I. meipona* and the dry *I. moulmeinensis*. Doubtless this is the Burmese representative of the Indian *I. frequens*; as a whole it is somewhat smaller (though individuals of the same size belonging to both species may be selected from a long series), the orange belt of the primaries is more golden, more deeply incised at the end of the cell, and, in the female, where it becomes an orange or yellow band, it is more narrowly bordered behind with black; the border of the secondaries is much narrower, almost disappearing in the extreme dry form, which is also much more heavily and clearly marked with ocelloid spots on the under surface than in *I. frequens.*

18. *Ixias dharmsalæ.*

Ixias dharmsalæ, Butler, P. Z. S. 1880, p. 150, pl. xv. figs. 8, 9.
Ixias ganduca, Moore, Journ. As. Soc. Beng. lii. p. 44 (1884).
Ixias colaba, Swinhoe, P. Z. S. 1885, p. 142, pl. ix. fig. 6.

India, from Darjiling to the Western Provinces and southwards to the Neilgherries.

Twenty-eight specimens are in the collection and one in the Hewitson cabinet. *I. colaba* is the wet-season form, *I. dharmsalæ* a dry form (probably occurring at the commencement of the dry season), and *I. ganduca* the extreme dry form.

This butterfly can be distinguished from *I. frequens* by its narrower, internally notched, and more or less macular hind-wing outer border, which also tapers less towards anal angle, and in the possession of an additional form of female (wholly black and white above). I am doubtful whether it will be possible to keep it distinct from *I. pirenassa* (of which no wet form answering to the type is known to me).

19. *Ixias satadra.*

Ixias satadra, Moore, Ann. & Mag. Nat. Hist. vol. xx. p. 50 (1877); Waterhouse, Aid, ii. pl. cxxviii. fig. 1 (1883).
Ixias Watti, Butler, P. Z. S. 1880, p. 151, pl. xv. fig. 1.
Ixias pygmæa, Moore, P. Z. S. 1882, p. 254, pl. xii. fig. 1.

Northern India from Sikhim to Campbellpore. Fourteen examples. B. M.

The type of the species is an intermediate-season form, but so little marked below that it probably occurs at the end of the wet season. We also have two dry forms, the first occurring probably at the commencement of the dry season and the other (which is more extreme in its seasonal characters) a little later; the latter is *I. pygmœa*. This species is characterized by the very irregular and somewhat narrow orange belt on the primaries of the male, the macular and rapidly tapering form of the blackish border to the secondaries; the dry-season female varies very little in colour, the subapical belt on the primaries being sulphur-yellow, sometimes feebly washed with orange.

20. *Ixias pirenassa.*

Thestias pirenassa, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 395, pl. ix. fig. 4, ♂ (1867).
Ixias kausala, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 49 (1877).
Ixias jhoda, Swinhoe, P. Z. S. 1885, p. 142, pl. ix. figs. 3, 4.

Western India southwards to Depalpur. Twenty-eight specimens. B. M.

It is quite possible that this may only be represented by dry phases of *I. dharmsalæ*; *I. pirenassa*, *I. jhoda*, and *I. kausala* representing three grades, of which the last-mentioned is the most pronounced dry form. We have four intermediate-seasonal specimens, one of which, in the pattern of the upper surface, links typical *I. pirenassa* to *I. jhoda*, whilst the three others show the upper-surface pattern of *I. jhoda* and the size of *I. kausala*.

The only objection to sinking *I. dharmsalæ* under *I. pirenassa* is that we should have to admit great instability in the seasonal modification of the hind-wing border (some of the examples obtained just after the rains showing a drier character of upper surface than those of the dry season), and we should also be compelled to recognize five grades of dryness in the under-surface pattern. On the whole I prefer to await further evidence before assuming that the forms of the *I. pyrene* section of my group 3 are more variable than those of the *I. evippe* section.

21. *Ixias sesia.*

Papilio sesia, Fabricius, Gen. Ins. p. 257 (1777); Donovan, Ins. China, pl. xxxi. fig. 2 (1798).

Burmah. Nineteen examples. B. M.

All the specimens that I have seen, including four in the

Hewitson cabinet, have a more or less dry-season character of under surface, but the character of the upper surface varies from wet to dry, as in the seasonal forms of the *I. marianne* group. The female invariably has the inner edging of the orange belt on the primaries widely interrupted in the centre, and the driest examples of the males have this blackish border reduced in the centre to a mere dusted line; the black discocellular spot on the primaries is almost invariably isolated from this black edging, owing to the continuation of the orange belt to a short distance inside of it. The late Capt. Watson regarded this last as a character of almost specific importance, but it is certainly not quite constant and therefore is of no great value.

It is, of course, just possible that *I. sesia* may be based upon additional variations of the dry form of *I. moulmeinensis*; but then we should have more difficulties to contend with than in the case of *I. pirenassa* as representing phases of *I. dharmsalæ*. I think it far more likely that, as in *I. marianne*, several of these allies of *I. pyrene* invariably show dry-season characters on the under surface which are merely intensified in the dry season, whereas the bordering of the secondaries above varies in width seasonally.

22. *Ixias pyrene.*

Papilio pyrene, Linn. Mus. Lud. Ulr. p. 241 (1764); Cramer, Pap. Exot. ii. pl. cxxii. figs. A, B (1779).

♀. *Papilio ænippe*, Cramer, Pap. Exot. ii. pl. cv. C, D (1779).

China. Twelve examples. B. M.

I have very little doubt that Cramer's figures of *P. pyrene* (A and B) represent the wet-season form, though showing dry-season characters on the underside. The species is nearly related to *I. sesia* and possibly not distinct from it, as Donovan's illustration of *I. sesia* is probably taken from a Chinese example; the dry form of China, however, which is typical *I. pyrene*, is decidedly larger than that of Burmah. The locality "America" given by Fabricius affords no clue to the real habitat of his type.

Group 4. (Type *I. Ludekingii.*)

Chiefly differs from the preceding group in the nearly white wings of both sexes. The seasonal differences are quite normal, only the dry form having the wings ocellated below.

23. *Ixias andamana.*

Ixias andamana, Moore, P. Z. S. 1877, p. 590.
Ixias lena, Swinhoe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 357 (1890).

Andamans. Twenty-two examples. B. M.

I. andamana was based upon the intermediate and *I. lena* on the dry form.

24. *Ixias Ludekingii.*

Thestias Ludekingii, Vollenhoven, Monog. Pier. p. 49, pl. v. fig. 6 (1865); Tijd. Ent. iii. p. 126 (1869).

Sumatra. ♂ from G. and S. coll. B. M.

Our single example belongs to the wet-season form, but the type was a dry form. We have what I believe to be the male intermediate form from Salanga.

25. *Ixias pallida.*

Ixias pallida, Moore, P. Z. S. 1878, p. 837.
Ixias citrina, Moore, *l. c.*

Tenasserim. Seven examples. B. M.

I. pallida was based upon a wet-season male, *I. citrina* upon a dry-season male.

26. *Ixias verna.*

Ixias verna, Druce, P. Z. S. 1874, p. 108, pl. xvi. figs. 5, 6.
Ixias latifasciatus ♀, Butler, P. Z. S. 1871, p. 252, pl. xix. fig. 3.

Burmah, High Island, Mergui. B. M.

We have fifteen examples, seven of which (including the types of the species) were presented by Messrs. Godman and Salvin. *I. latifasciatus* was figured from an intermediate female, *I. verna* was described from a dry-season pair. A male from Mergui in the collection may perhaps be a curious aberration of this species.

Group 5. (Type *I. marianne.*)

I am quite satisfied that the late Capt. Watson was correct in his view of the species of this group; all the seasonal forms show ocellated markings on the under surface, but they become emphasized in the dry season, whilst the black belt across the primaries on the upper surface and the black border to the secondaries are reduced.

27. *Ixias marianne.*

Papilio marianne, Cramer, Pap. Exot. iii. pl. ccxvii. C–E (1782).
Ixias bebryce, Hübner, Verz. bek. Schmett. p. 95 (1816).
Ixias agniverna, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 50 (1877).
Ixias depalpura, Butler, P. Z. S. 1883, p. 153, pl. xxiv. figs. 6, 7.
Ixias meridionalis, Swinhoe, P. Z. S. 1885, p. 140, pl. ix. fig. 5.
Ixias cumballa, Swinhoe, *t. c.* p. 141, pl. ix. figs. 13, 14.

We have twenty-five examples of the wet-season form (*I. cumballa*), thirteen of the intermediate form (*I. marianne*), twenty-three of the early dry form (*I. meridionalis*), and sixteen of the late dry form (*I. agniverna*=*depalpura*)—seventy-seven examples in all.

28. *Ixias nola.*

Ixias nola, Swinhoe, P. Z. S. 1889, p. 399.

Mahableshwar. Twelve examples. B. M.

The seasonal forms are all represented in our series; a pair of the wet and a pair of the dry form are equally labelled as types.

Febr. 1898

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, February 1, 1898.]

On a Collection of Lepidoptera made by Mr. F. V. Kirby, chiefly in Portuguese East Africa. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

The collection of which the following is an account is chiefly of interest because of the care with which most of the specimens have been labelled, and from the fact that the supposed dry- and wet-season forms of some of the species were both secured. There are also several forms which are by no means common in collections, and an interesting extreme form of *Alæna nyassæ*, var. *ochracea*, very deep in colouring, with the ochreous belt of the primaries united to a spot of this colour within the discoidal cell and that of the secondaries covering almost the entire basal two-thirds of these wings.

The following is a list of the species:—

RHOPALOCERA.

NYMPHALIDÆ.

1. **AMAURIS ECHERIA** Stoll.

Eastern Transvaal and Portuguese East Africa.

2. **AMAURIS ALBIMACULATA** Butl.

Eastern Transvaal.

3. **AMAURIS OCHLEA** Boisd.

Eastern Transvaal, and Shiringoma and Makaya districts, (Portuguese East Africa), November 1896.

4. **LIMNAS CHRYSIPPUS** Linn.

Eastern Transvaal, Nyakongoli, Makoto, August 21st; Shiringoma and Makaya districts, November 1896 and January 1897.

5. **GNOPHODES DIVERSA** Butl.

Inure; Patawali, 27th August, 1897.

6. **MELANITES LIBYA** Dist.

Inure.

7. **MELANITIS SOLANDRA** Fabr.

Inure; Mkanga Mivana, 10th September, 1896.

Both wet and dry forms were obtained; the specimens (dry-season) from Mkanga Mivana were terribly shattered, having probably been long on the wing.

8. **SAMANTA PERSPICUA** Trim.

Inure.

Wet, intermediate, and dry forms were obtained, the last being my *S. simonsi* and thus proving the correctness of Mr. Marshall's supposition. In the intermediate form, however, the fulvous colouring of *S. simonsi* is only indicated on the ocelliferous area of the wings.

9. **MYCALESIS SAFITZA** Hewits.

Eastern Transvaal and Inure.

Wet, intermediate, and dry-season examples were obtained; *S. caffra* is represented by the intermediate form.

10. **PHYSCÆNURA PIONE** Godm.

Inure.

11. YPTHIMA PUPILLARIS Butl.

Inure (dry-season form).
The ocelli are reduced to points on the under surface.

12. EURALIA WAHLBERGI Wallgr.

Makaya district, January and February 1896; Inure.
The specimens are a good deal worn.

13. EURALIA KIRBYI sp. n.

Nearest to *E. deceptor*, but in the character of the white markings reminding one of *Panopea delagoæ*, the belt crossing the median vein of primaries being narrower and barely visible above the second median branch; the subapical belt also decidedly narrower, so that the space between the two belts is of nearly double the width; the other white spots on these wings similarly placed to those in *E. deceptor*, but that towards the base of the cell much smaller; the belt across the secondaries narrower and whiter; the outer border consequently half as wide again as in *E. deceptor*, the subapical series of white spots very small or wanting, and the submarginal spots small and squamose; below the differences are similar, the costal area of secondaries being much browner. Expanse of wings 87 millimetres.

Shiringoma and Makaya districts, November 1896.

This is doubtless a representative form of *E. deceptor*, but differs quite as much in character as any of the other described species of its genus, excepting perhaps *E. usambara* of the *E. anthedon* group and *E. mechowi* of the *E. dinarcha* group.

14. HYPOLIMNAS MISIPPUS Linn.

Shiringoma and Makaya districts, November 1896.

15. CHARAXES VARANES Cram.

Makaya district, January and February 1896.

16. JUNONIA ACTIA Dist.

Chiperoni, Portuguese Central Africa, September 1896.

17. JUNONIA CUAMA Hewits.

Chiperoni, September 1896, and Inure.

18. JUNONIA ELGIVA Hewits.

Eastern Transvaal; Chiperoni, September 1896; Shiringoma and Makaya districts, November 1896; Inure.

19. JUNONIA ARTAXIA Hewits.

Chiperoni, September and October; Shiringoma and Makaya districts, November 1896.

20. JUNONIA CLELIA Cram.

Eastern Transvaal, and Inure, Portuguese East Africa.

21. Junonia boopis Trim.

Nyakongoli, Makoto, August 21st; Chiperoni, September 1896.

22. Protogoniomorpha anacardii Linn.

Eastern Transvaal and Portuguese East Africa.

23. Protogoniomorpha aglatonice Godt.

Inure.
The vars. *aglatonice* and *nebulosa* were both obtained.

24. Pyrameis cardui Linn.

Eastern Transvaal.

25. Euryphura achlys Hopff.

♂. Chiperoni, Portuguese Central Africa, September 1896.

26. Euryphene senegalensis Hübn.

♀. Chiperoni, October 1896.

27. Aterica galene Brown.

Patawali, Portuguese East Africa, 27th August, 1897.
Only one much damaged male of this species was obtained.

28. Euphædra neophron Hopff.

Portuguese East Africa.
No exact locality is given on the envelope.

29. Crenidomimas concordia Hopff.

♀. Patawali district, Portuguese East Africa.
The single example obtained corresponds exactly with Hopffer's figure in the colouring of the upper surface, but the innermost row of black spots on the secondaries is absent (as is sometimes the case in the nearly allied *C. crawshayi*): on the under surface the colouring is a little deeper than in the figure; but, as I pointed out when comparing *C. crawshayi* with Hopffer's figures, the blue spots on the primaries (excepting at apex) are not connected with the blue outer border; on the other hand this border is not continuous on the primaries as represented in Hopffer's description and figure. In some of the characters which distinguish *C. crawshayi* from *C. concordia* the present specimen therefore seems to be intermediate, though the more varied and blue-tinted upper surface with the wider bifid whitish subapical bar give it a different aspect from any of the females of the Nyasa type; so that, until the separation of the spots from the border on the under surface has been proved to be variable, the two forms must still be kept apart.

30. Crenis boisduvali Wallgr.

Eastern Transvaal.
The example now received agrees most nearly with one which

we received from Zomba in 1895, and differs about as much as the other forms to which names have been given recently; but considering that the majority of them occur in Natal, there can be little doubt that they are either seasonal forms or sports of two or three variable species at most. We received typical *C. boisduvali* from Zomba in 1893.

31. NEPTIS AGATHA Cram.

Chirimani, Portuguese East Africa, August 31st in open forest; Inure; Chiperoni, Portuguese Central Africa, October 1896.

The variation in size of this species is extraordinary; the Chiperoni example has an expanse of 70 millimetres.

32. ATELLA PHALANTHA Drury.

Eastern Transvaal and Portuguese East Africa.

Both the wet-season form (*A. columbina*) and the dry form (*A. phalantha*) were obtained.

33. BYBLIA ACHELOIA Wallgr.

Eastern Transvaal; Inure; Chiperoni, September 1896.

The typical dry form and the wet-season *B. vulgaris* were both obtained.

34. EURYTELA DRYOPE Fabr.

♂. Inure.

35. ACRÆA CABIRA Hopff.

Inure.

The specimens all have the pattern of the variety *apecida*.

36. ACRÆA SERENA var. BUXTONI Butl.

♂. Portuguese East Africa.

37. ACRÆA LYCIA Fabr.

Eastern Transvaal and Nyakongoli; Makoto, Portuguese East Africa, 21st August.

Only two examples without head or abdomen.

38. ACRÆA DOUBLEDAYI Guér.

Eastern Transvaal; Chiperoni, October 1896; Nyakongoli, 21st August.

39. ACRÆA NATALICA Boisd.

Nyakongoli, 21st August.

40. ACRÆA ACRITA Hewits.

Eastern Transvaal; Nyakongoli, 21st August; Chirimani, 31st August; Chiperoni, September 1896; Patawali district in open bush country and plantations.

41. ACRÆA AGLATONICE Westw.

♀♀. Portuguese East Africa (exact locality not noted).

42. Acræa anemosa Hewits.

Nyakongoli, 21st August; Shiringoma and Makaya districts, November 1896.

Lycænidæ.

43. Alæna nyassæ var. ochracea Butl.

Inure.
A very interesting form of this variety.

44. Polyommatus bæticus Linn.

Inure; Chiperoni, September 1896.

45. Catochrysops osiris Hopff.

Eastern Transvaal and Portuguese East Africa.

46. Catochrysops patricia Trim.

♂. Chiperoni, October 1896.
A curious aberration with white-edged elongated blackish spots across the disc of the wings.

47. Tarucus plinius Fabr.

Inure.

48. Cacyreus lingeus Cram.

Patawali, in plantations.

49. Zeritis harpax Fabr.

Eastern Transvaal.

50. Crudaria leroma Wallgr.

Inure.

51. Myrina ficedula Trim.

Eastern Transvaal.

52. Virachola antalus Hopff.

Inure.

53. Iolaus philippus Fabr.

Eastern Transvaal and Inure.

54. Iolaus buxtoni Hewits.

♀. Chiperoni, September 1896.

55. Iolaus pallene Wallgr.

Chiperoni, September 1896.

56. Stugeta bowkeri Trim.

Inure.

PAPILIONIDÆ.

57. MYLOTHRIS AGATHINA Cram.

Eastern Transvaal, Nyakongoli, August 21st; Chirimani, August 31st.

58. NYCHITONA MEDUSA var. ALCESTA Cram.

Portuguese East Africa.
I believe this genus consists of one variable species, but the variations of the African and Mascarene examples are somewhat different from those of Asia and Australasia, so that there is some excuse for keeping them separate.

59. TERIAS BRIGITTA var. ZOE Hopff.

Eastern Transvaal.

60. TERIAS MARSHALLI Butl.

♀. Patawali, Portuguese East Africa.
A small example of the intermediate-season form.

61. TERIAS HAPALE var. ÆTHIOPICA Trim.

Patawali and Inure.

62. TERACOLUS REGINA Trim.

♂ ♀. Wet form, Makaya district, January and February 1896.
♀. Dry form, Shiringoma and Makaya districts, November 1896.
The female of the wet form (*T. anax*) is, though rubbed, a new variety to me, the usual white spots on the apical area of the primaries being replaced by spots of rosy violet.

63. TERACOLUS IONE Godt.

♀ ♀. Portuguese East Africa, Makaya district, January and February 1896.

64. TERACOLUS SIPYLUS Swinh.

♂ ♂. Portuguese East Africa (no exact locality noted).

65. TERACOLUS ITHONUS Butl.

♂. Nyakongoli, Makoto, August 21st; ♀. Patawali.
The male (var. *ignifer*) is too much injured to be fit for the collection; the female is a starved intermediate-season form.

66. TERACOLUS OMPHALE Godt.

Eastern Transvaal.

67. TERACOLUS MUTANS Butl.

♀. Portuguese East Africa (wet-season).

68. CATOPSILIA FLORELLA Fabr.

Nyakongoli, August 21st; Chiperoni, October; Shiringoma and Makaya districts, November 1896 and January 1897.

69. **Belenois thysa** Hopff.

Nyakongoli, August 21st.

70. **Belenois severina** Cram.

Eastern Transvaal; Portuguese East Africa, Patawali district. The wet form (*B. infida*), the intermediate form, and the dry form (*B. severina*) are all represented.

71. **Belenois mesentina** var. **lordaca** Walk.

♀. Portuguese East Africa.

72. **Belenois zochalia** Boisd.

♀. Dry-season form, Chirimani, August 31st.

73. **Leuceronia argia** Fabr.

Shiringoma and Makaya districts, November 1896.

74. **Papilio nyassæ** Butl.

Makaya district, January and February 1896.

75. **Papilio polistratus** Grose-Smith.

♀. Makaya district, January or February 1896.
Differs from the illustration of the male in its greater size; the pale markings on the primaries, excepting at external angle, are much broader; the markings on the basi-abdominal half of the secondaries are also broader, but the crescentic markings above the tail are very indistinct.

76. **Papilio corinneus** Bertol.

Inure, Nyakongoli, August 21st; Shiringoma and Makaya districts, November 1896 and January 1897.

77. **Papilio leonidas** Fabr.

Makaya district, January and February 1897.

78. **Papilio demoleus** Linn.

Eastern Transvaal, Makaya district, January and February 1897.

79. **Papilio erinus** Gray.

Eastern Transvaal, Makaya district, January and February 1896.

80. **Papilio merope** var. **dardanus** Brown.

Makaya district, January and February 1896.

HESPERIIDÆ.

81. **Tagiades flesus** Fabr.

Patawali.

82. **Eretis djælælæ** Wallgr.

Portuguese East Africa (exact locality not noted).

83. **Andronymus philander** Hopff.[1]

Chiperoni, September 1896.

84. **Baoris netopha** Hewits.

Chiperoni, September 1896.

Corresponds nearly with Trimen's figure of *B. roncilgonis* above and with Karsch's colouring of *B. cojo* below. Two examples which we have from Fwambo, Tanganyika, have the under surface mostly bright ochreous and scarlet, but with the same markings exactly as in *B. roncilgonis.*

85. **Rhopalocampta pisistratus** Fabr.

Portuguese East Africa (no exact locality noted).

HETEROCERA.

Arctiidæ.

86. **Deiopeia pulchella** Linn.

Eastern Transvaal and Inure.

87. **Aletis monteironis** Druce.

♀. Portuguese East Africa.

88. **Leptosoma leuconoe** Hopff.

Inure.

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[1] I take this opportunity of describing a beautiful new species of *Cyclopides* from Fwambo, Tanganyika, collected by Mr. A. Carson:—

Cyclopides carsoni sp. n.

Nearest to *C. perexcellens,* the wings slightly broader in proportion to their length; the upper surface of a somewhat deeper olive-brown, the fringe of the primaries ochreous at external angle; no ochreous spots in the discoidal cell; the spots on the disc larger, the three uppermost (bifid) spots much paler; the fringe of the secondaries varied with dark brown: on the under surface of the primaries there is a well-defined pale ochreous streak above the cell from base to middle of wing, but no ochreous spot within the cell; the three uppermost discal spots as above, but the lowest spot very small; the secondaries below are cream-coloured with slight silvery reflections; the veins and outer margin black, but not the abdominal margin; a costal streak to middle, a quadrate patch from costal to subcostal vein above the cell, two similar patches placed obliquely above each of the subcostal branches, a quadrifid band from second subcostal branch across the end of the cell almost to the submedian vein and a quinquefid submarginal band between the same veins, deep ochreous bordered with black; a squamose pale ochreous longitudinal submedian streak, broadly interrupted by blackish brown, from the extremities of the two transverse deep ochreous bands to the submedian vein. Expanse of wings 34 millimetres.

Three males in the British Museum collection.

AGARISTIDÆ.

89. **XANTHOSPILOPTERYX SUPERBA** Butl.

Shiringoma and Makaya districts, November 1896.

NOCTUIDÆ.

90. **TÆNIOPYGA SYLVINA** Stoll.

Chiperoni, September 1896.

HYPSIDÆ.

91. **EGYBOLIA VAILLANTINA** Stoll.

Inure.

GEOMETRIDÆ.

92. **COMIBÆNA LEUCOSPILATA** Walk.

Portuguese East Africa (exact locality not noted).

March 1898

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON,
March 1, 1898.]

On the Lepidopterous Insects collected by Mr. G. A. K. Marshall in Natal and Mashonaland in 1895 and 1897.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

(Plate XX.)

The consignment of which the following is an account was received too late to be noticed in my previous paper (P. Z. S. 1897, p. 835); it is, in some respects, of even greater interest, as including not only examples of several interesting new species and of many species new to the Museum series, but also the seasonal forms, authenticated by the donor, of a fair number of butterflies which have been regarded as distinct, and the varietal character of which is still called in question by some of the leading lepidopterists in this country.

Speaking of the series from Mashonaland, Mr. Marshall observes :—"My Mashonaland collections, which I had intended to take home with me, have only just arrived here (or rather half of them), having been fourteen months coming down from Salisbury! I find among the *Teracoli* a single dry-season male of *T. hildebrandti* (which at the time I took to be a sport of *T. annæ*) and also a female of *T. pallene*, Hopff., which is almost identical with the figure of your *T. infumatus*.

"You will find three males and one female of a '*Lycæna*' from the Karkloof, which Trimen considers to be only a variety of his *L. niobe*, but which I think is probably specifically distinct. It was discovered by Hutchinson and Barker in 1892 on Mr. Ball's farm in the Karkloof District near Maritzburg, and has apparently never been taken elsewhere. From their account (I have never seen it in life) it differs much in habits from typical *L. niobe*. It has been found only within a very limited area, a few acres in extent, flying rapidly over a patch of very long rank grass along the outskirts of a clump of forest, and being on the wing only in *autumn* (viz. March and April).

"*L. niobe* is distributed throughout Natal (it varies above in being either blue or brown), frequenting open country with short grass, and flying with a low, rapid flight; it occurs only during the spring months.

"It will be unnecessary to point out the differences in colouring, the most noticeable of which are the different position of the discal row on underside of secondaries and the presence of the metallic-green spot at anal angle in the 'variety.' I am sorry that the specimens are in such poor condition; they were given to me by Mr. Ball."

Mr. Marshall did not forward the male of "*T. hildebrandti*," but it probably is what he at first supposed—a mere sport of *T. annæ*, corresponding in colouring with the *T. calliclea* (=*hildebrandti*) form of the Nyasa species. The two species are very closely related—little more than local forms, in fact.

As regards the "*Lycæna*," I quite agree with Mr. Marshall that it requires a distinctive name; it certainly is not identical with *Catochrysops niobe*, but is a finer and more brightly coloured species.

The following is a list of the species received in Mr. Marshall's last consignment :—

NYMPHALIDÆ.

SATYRINÆ.

1. SAMANTA PERSPICUA (var. SIMONSI Butl.).

Mazoe, 4000 feet, 30th October, 1894; Gadzima, 4200 feet, Umfuli River, Mashonaland, 30th July, 1895.

2. MYCALESIS SELOUSI Trim.

Enterprise Camp, near Salisbury, 5000 feet, Mashonaland, 23rd June and 2nd July, 1895.

New to the Museum collection.

3. YPTHIMA DOLETA Kirby.

Wet form. Salisbury, 5000 feet, 2nd December, 1894.
Dry form. Gadzima, 4200 feet, 7th August, 1895.

4. YPTHIMA MASHUNA Trim.

Salisbury, 5000 feet, Mashonaland, 17th and 24th March, 1895.
New to the Museum collection.

5. PSEUDONYMPHA VIGILANS Trim.

Salisbury, ♂ 10th, ♀ 17th March, 1895.

6. PSEUDONYMPHA CASSIUS Godt.

Karkloof, Natal, 4200 feet, 31st January, 1st and 5th February, 1897.

7. PSEUDONYMPHA SABACUS Trim.

Karkloof, 1st, 5th, and 10th February, 1897.

8. NEOCÆNYRA EXTENSA, sp. n. (Plate XX. fig. 1.)

♂. Allied to *N. gregorii*, but differing in the much longer costal margin of the primaries, the reddish-orange irides to the ocelli, the more sharply defined black transverse lines on the under surface, the submarginal lines on the secondaries being also much more regular, the postmedian line much less zigzag in character and approaching nearer to the ocelli, the inner line crossing the cell indistinct, but bordered on abdominal area with ferruginous scales; base of costa also ferruginous. Expanse of wings 50 millimetres.

Salisbury, 5000 feet, Mashonaland, 12th January, 1895.

Incorrectly identified as *N. duplex*, which it does not at all resemble.

NYMPHALINÆ.

9. CHARAXES SATURNUS Butl.

♂. Upper Hanyani River, Mashonaland, 4700 feet, 20th July, 1895.

10. JUNONIA ARCHESIA Cram.

Dry form. Salisbury, 5000 feet, Mashonaland, 19th May, 1895.

10 *a.* JUNONIA PELASGIS Godt.

Wet form. Gadzima, Umfuli River, 4200 feet, 27th and 30th December, 1895.

11. JUNONIA SESAMUS Trim.

Salisbury, Mashonaland, 5000 feet, 17th March; Enterprise Camp, Salisbury, 21st June, 1895; Karkloof, Natal, 4200 feet, 20th February, 1897.

12. JUNONIA CALESCENS Butl.

Junonia octavia var. *natalensis* Staudinger (nec *natalica* Felder).

Gadzima, 4200 feet, Umfuli River, Mashonaland, 2nd, 22nd, and 27th December, 1895.

13. JUNONIA TRIMENI Butl.

♀. Marudsi River, Mazoe District, Mashonaland, 1st January, 1895; Gadzima, 4200 feet, Umfuli River, 22nd and 23rd December, 1895.

These were labelled by Mr. Marshall as *J. simia* Wllgr., a much smaller and differently shaped insect, with very different pattern on the under surface and no rosy-whitish discal streak above.

A single small example of *J. simia* was obtained at Gadzima on the 30th December.

14. JUNONIA AURORINA Butl.

Karkloof, Natal, 4200 feet, 29th to 31st January, 10th, 11th, and 17th February, 1897.

This is stated by Mr. Marshall to be the wet-season form of *J. tugela*, but from his own dates it is certain that both fly together in February; moreover, judging them by *J. artaxia*, they both have a dry-season under surface to the wings: I am therefore naturally very sceptical as to the identity of these two allied species.

15. JUNONIA TUGELA Trim.

Karkloof, Natal, 4200 feet, May 1896, and 20th February, 1897.

16. JUNONIA CUAMA Hewits.

Dry form. Enterprise Camp, near Salisbury, 5000 feet, Mashonaland, 7th July; Gadzima, 5th August.

Wet form. Mazoe District, 4000 feet, 1st November, 1895.

As I have suspected for some time, the seasonal forms of this species differ very little: that of the wet season has the black markings of the upper surface more pronounced, the costa of primaries rather shorter (giving a squarer character to the wing) than in the dry form, the markings below much better marked and the discal spots more decidedly ocelloid. I am now quite satisfied that *J. trimeni* has nothing to do with *J. cuama* or with *J. simia*. It will be remembered that I have always opposed the amalgamation of these three very dissimilar species on the ground that they are undoubtedly on the wing simultaneously at all seasons.

17. JUNONIA ELGIVA Hewits.

Malvern, Natal, 800 feet, 22nd and 30th March, 1897.

18. JUNONIA CLELIA Cramer.

♂ ♂. Gadzima, 4200 feet, Umfuli River, Mashonaland, 29th August and 2nd December, 1895.

One of the specimens is a curious aberration in which the large blue patch on the secondaries is crossed near its apical outer border by three large more or less oval black spots; just in front of the blue patch is a scar, probably indicating some injury done to the pupa, which apparently has modified the deposition of pigment in the scales.

19. JUNONIA ARTAXIA Hewits.

Gijima, Umfuli River, 29th July; Gadzima, 3rd October, 1895.
Wet form. J. nachtigali Dewitz.
Gadzima, 27th and 28th December, 1895.

20. HYPOLIMNAS MISIPPUS Linn.

Gadzima, 22nd, 27th, and 30th December, 1895.

21. HAMANUMIDA DÆDALUS Fabr.

Salisbury, 23rd March and 18th April; Hartley Hills, Umful River, 4300 feet, 25th July; Gijima, 24th August; Gadzima 4200 feet, 26th December, 1895.

The wet-season phase was obtained from December to the end of March, the dry phase from April to the end of August.

22. NEPTIS AGATHA Cram.

Malvern, Natal, 6th and 13th April, 1897.

23. EURYTELA HIARBAS Drury.

Karkloof, Natal, 9th February and 24th March; Malvern, 27th March, 1897.

ACRÆINÆ.

24. ACRÆA LYCIA Fabr.

Malvern, 800 feet, Natal, 13th April, 1897.

25. ACRÆA RAHIRA Boisd.

Marudsi River, Mazoe District, Mashonaland, 1st January; Gadzima, 22nd August, 1895.

26. ACRÆA NOHARA Boisd.

♀, Salisbury, 24th March, 9th June; ♂ ♀, Enterprise Camp, 4th July, 1895.

The specimens are marked as "wet" and "dry," but I see no great difference between them; they are all rather small examples, and a varietal name is attached to them: if not already published, it were better that it should not be.

27. Acræa doubledayi Guér.

Wet. ♂ ♀, Malvern, near D'Urban, Natal, 800 feet, 2nd to 4th March, 1897.

Dry. ♂, Gadzima, 4200 feet, Umfuli River, Mashonaland, 11th August; Gijima, 23rd August, 1895.

If the single male from Mashonaland represents the normal dry-season phase, it only differs from that of the wet-season in its inferior size, and would be indistinguishable from starved examples obtained during the rains; both, however, differ very considerably from the wet form of the scarcely distinct *A. nero* of Eastern Africa.

28. Acræa anacreon Trim.

Dry-season form. Karkloof, 4200 feet, Natal, 20th February, 1897.

An extraordinarily well-developed example showing nearly double the usual expanse of wings.

"*Dry*" *and wet form. A. induna*, Trim. Gijima, Mashonaland, 14th August; Gadzima, 18th December, 1895.

The so-called dry form of *A. induna* (because obtained in the dry-season) is a starved and somewhat worn little male, which, in my opinion, is only a belated wet form (provided that the heavy black apex really is seasonal, as it is said to be in certain species in the genus). The black apical patch in this example is slightly reduced, as might be expected; but Mr. Marshall has himself admitted that in some of the species this black patch is a characteristic of the wet season; in any case it is certainly a varietal, not specific, character, inasmuch as we have complete series of intergrades between the extremes in several forms of *Acræa*.

29. Acræa asema Hewits.

Gadzima, Umfuli River, 29th July, 11th, 14th, and 24th August, 1895.

Mr. Marshall considers this to be the dry form of the following, of which he sends one curious example, said to be the intermediate form; it certainly looks like it, but I should like more conclusive evidence than is afforded by one specimen which was obtained almost at the same time (in the same month) as *A. asema*.

30. Acræa violarum Boisd.

"*Intermediate form.*" Hartley Hills, Mashonaland, 27th July, 1895.

31. Acræa caldarena Hewits.

♂ *wet form*, Salisbury, 31st May; ♀ ♀ *dry form*, Gadzima, 4th August and 20th September, 1895.

It would seem that the seasonal forms of this species differ chiefly in size, the dry form being smaller; both phases agree in the large black apical patch, proving that this is not an invariable seasonal character, but by no means proving that it is not so in most of the species which possess it.

32. ACRÆA PETRÆA Boisd.

Malvern, 800 feet, Natal, 13th April, 1897.

33. ACRÆA ANEMOSA Hewits.

Gadzima, 4200 feet, Umfuli River, Mashonaland, 31st August, 3rd October, 20th December, 1895.

34. ACRÆA NEOBULE Doubl.

♂ ♂, Gadzima, 3rd August, 1st December, 1895; ♀ ♀, Malvern, 25th March, 5th April, 1897.

The seasonal forms seem to differ very little.

35. ACRÆA HORTA Linn.

♀, Frere, 3800 feet, 24th December, 1896; Estcourt, 4000 feet, 19th January; ♂ ♂, Karkloof, 4200 feet, Natal, 4th and 11th February, 1897.

LYCÆNIDÆ.

36. ALÆNA NYASSÆ Hewits.

Gadzima, 24th December, Mazoe, 29th December, 1895.

37. POLYOMMATUS BÆTICUS Linn.

Loesskop, 4500 feet, Little Tugela River, Natal, 20th December, 1896.

38. CATOCHRYSOPS ASOPUS Hopff.

♀ *dry form*, Gijima, 11th August; *wet form*, Gadzima, 19th November, 1895.

39. CATOCHRYSOPS BARKERI Trim.

♀, Malvern, 800 feet, Natal, 11th March, 1897.

40. CATOCHRYSOPS PATRICIA Trim.

♂ ♂, Loesskop, 4500 feet, Little Tugela River, Natal, 20th December, 1897; ♀ ♀, Gadzima, Mashonaland, 23rd and 25th December, 1895.

41. CATOCHRYSOPS PLEBEIA, sp. n. (Plate XX. fig. 2.)

Lycæna parsimon Trim. (nec auct. vetust.).

As I have already stated, this is certainly not the Fabrician species, which occurs on the N.-western coast of Africa; it differs from the latter and the nearly allied *L. patricia* in the smoky-brown, somewhat thinly-scaled upper surface of the male, with other minor characters indicated in Mr. Trimen's full description.

♂, Mazoe District, 23rd December, 1894; ♀, Salisbury, 12th January, 1895; ♂, Gadzima, 25th December, 1895; ♀, Estcourt, Natal, 30th December, 1896; ♂, 1st January, 1897.

42. CATOCHRYSOPS GLAUCA Trim.

♂, Gadzima, 26th December, 1895.

43. CATOCHRYSOPS ARIADNE, sp. n. (Plate XX. figs. 3, 4.)

Nearly allied to *C. niobe*, larger; differs above in the narrower deep smoky border to all the wings and the slightly clearer violet ground-colouring. On the under surface all the black and brown spots, which are more numerous, are distinctly edged with pure white; the discal white band immediately following the transverse series of black spots is well defined and pure white in all the wings, whilst in the secondaries it is farther from the outer margin; the submarginal annular markings are much wider, but indistinct on the secondaries; the subanal black spot, however, is considerably larger, encloses a metallic-blue crescent, and is edged internally by a Λ-shaped orange marking: the upper surface of the female is shot with golden cupreous, and towards the base with lilac; otherwise it resembles the male. Expanse of wings 39 millimetres.

Three males and one female, Karkloof, Natal.

This is the species referred to by Mr. Marshall (*vide* Introduction to the present paper) as probably distinct from *C. niobe*. There is, of course, just a possibility that it may prove to be the wet form of *C. niobe*, all our examples of which were obtained in September; but I know of no other *Catochrysops* which exhibits such well-defined seasonal characteristics, whilst the different habits of the two insects are strongly suggestive of specific distinction, though not necessarily conclusive.

44. CATOCHRYSOPS DOLOROSA Trim.

Estcourt, 1st and 3rd January, 1897.

45. CATOCHRYSOPS IGNOTA Trim.

Frere, 19th December, 1896.

46. CATOCHRYSOPS MAHALLOKOÆNA Wallgr.

♀, Estcourt, 17th January, 1897.

This species has the neuration of *Catochrysops*, but more nearly the pattern of *Neolycæna*.

47. NEOLYCÆNA CISSUS Godt.

♂ ♂, Gijima, 17th August; Gadzima, 31st December, 1895.

The dry-season form is much smaller and with all the markings below less prominent.

48. CUPIDOPSIS JOBATES Hopff.

Frere, 24th and 26th December, 1896.

49. AZANUS NATALENSIS Trim.

Estcourt, 8th January, 1897.

50. Azanus moriqua Wallgr.

Estcourt, 15th to 21st January, 1897.

51. Azanus jesous Guér.

Gadzima, 6th November, 21st and 24th December, 1895; Estcourt, 15th, 16th, 18th, 19th, and 20th January, 1897.

52. Azanus zena Moore.

Estcourt, 15th to 21st January, 1897.

53. Azanus plinius Fabr.

Salisbury, 9th June, 1895; Estcourt, 19th January, 1897.

54. Nacaduba sichela Wallgr.

Mazoe District, 24th October, 1894.

55. Zizera antanossa Mab.

Salisbury, 9th December, 1894; Malvern, 27th February, 1897. New to the Museum from South Africa; but specimens, apparently of this species, are in the collection from Sierra Leone and Wadelai.

56. Zizera lucida Trim.

Karkloof, 11th February; Malvern, 6th and 13th April, 1897.

57. Castalius hintza Trim.

♂ (as ♀), Malvern, 3rd March, 1897.

58. Lycænesthes liodes Hewits.

♀, Karkloof, 1st February, 1897.

59. Lycænesthes otacilia Trim.

♂ ♂, ♀, Estcourt, 17th and 19th January, 1897.

60. Lycænesthes amarah Lef.

Gadzima, 28th December, 1895.

61. Lycænesthes adherbal Mab.

Mazoe District, 24th, 25th, and 29th October, 1894.

62. Scolitantides bowkeri Trim.

Karkloof, 9th February, 1897.
Probably most nearly allied to *S. thespis*, but approaching *Uranothauma* somewhat in the pattern of the under surface; it is quite new to the Museum collection.

63. Hyreus lingeus Cram.

Gadzima, 17th September, 1895; Karkloof, 29th January, 1897.

64. Zeritis amanga Westw.

Gadzima, 2nd October, 1895.

65. Zeritis harpax Fabr.

♂ ♂, Mazoe District, 24th and 25th October; ♀, 17th November, 1894; ♂, Gijima, 11th August, 1895; ♂ ♂, ♀, Estcourt, 14th, 16th, 19th, and 20th January, 1897.

66. Crudaria leroma Wllgr.

Gadzima, 10th and 18th September, 1895.

67. Lachnocnema bibulus Fabr.

♀, Estcourt, 16th December, 1896; ♀, 1st January, ♀, 19th January, 1897.

68. Lachnocnema durbani Trim.

♀, Estcourt, 30th December, 1896; ♂, 1st January; ♂ ♂, ♀, 3rd January, 1897.

69. Thestor basuta Wallgr.

♂ ♂, Frere, 15th and 19th December, 1896; ♂ ♂, ♀ ♀, Estcourt, 1st, 8th, and 13th January, 1897.

70. Alæides trikosama Wallgr.

Frere, 26th December, 1896; Estcourt, 8th, 14th, and 17th January, 1897.

71. Alæides orthrus Trim.

Estcourt, 17th and 19th January, 1897.

72. Chrysophanus orus Cram.

♂ ♀, Frere, 18th December, 1896.

73. Tingra tropicalis Boisd.

Malvern, 17th, 19th, 20th, 22nd, and 30th March, 6th April, 1897.

74. Myrina ficedula Trim.

Malvern, 5th and 6th April, 1897.

75. Spindasis caffer Trim.

Gadzima, 4th August, 1895.

Dry form, with reduced orange anal patch.

76. Spindasis masilikazi Wallgr. (Plate XX. fig. 5.)

Mazoe District, 31st December, 1894; Gadzima, 29th and 31st August, 4th and 5th September, 30th December, 1895.

77. Spindasis ella Hewits. (Plate XX. fig. 6.)

S. homeyeri, Marshall (*nec* Hewits.).

Distinctly smaller than *S. homeyeri*, the orange markings on the upper surface of the primaries entirely different, consisting normally of a spot in the cell followed by a transverse band beyond the cell; the former is, however, sometimes carried obliquely downward, so as to unite with the latter (forming a large V-shaped character); the submarginal orange band consists of three portions, a spot near the costa and two transverse irregular bifid (rarely subconfluent) spots below it; the anal orange patch on the secondaries of *S. homeyeri* is replaced by a sordid ashy patch marked with the usual silver spots; the blue areas of *S. homeyeri* are dull greyish lavender in this species. Apart from the pale buffish-brown ground-colour, the under surface of the wings differs entirely from that of *S. homeyeri*: all the markings are edged with brown (not ferruginous or dull red); those of the primaries are emphasized on the costal margin by a series of about eight jet-black spots, they consist of three fairly regular equidistant oblique bands between the base and the end of the discoidal cell, then follows a costal spot followed by an irregular transverse discal band dislocated at second median branch, this again is followed by a more or less defined, partly linear and partly normal band from costa to submedian vein and a very indistinct dusky submarginal line; marginal line jet-black, internal area and fringe white somewhat pearly: the markings of the secondaries consist of two series of three spots towards the base parallel to the abdominal border, an irregular armillate band, acutely elbowed below the first median branch and interrupted on submedian vein, a short somewhat irregular discal band from costa to third median branch, and an unevenly zigzag submarginal band with indistinct outer edging; marginal line black from anal angle to third median branch; all these bands, as usual, have silvery centres; fringe white, excepting at anal angle, where it is black, the spot above it being narrowly black, then dull chocolate, followed by a sprinkling of black scales; the second spot on the other side of the submedian vein is externally of the ground-colour, internally silver followed by a sprinkling of black scales. Expanse of wings 29 millimetres.

Gadzima, Mashonaland, 31st August, 13th and 25th September, 1895.

As Trimen compares this species with his "*S. natalensis*"= *S. caffer* (to which, in my opinion, it has but little affinity), a description of its peculiarities compared with *S. homeyeri* will, I think, be useful to future workers. Hewitson's type is a very poor and damaged male, in which none of the orange bands on the upper surface are united; the union of the two inner bands in one of Mr. Marshall's specimens shows that this species is not nearly related to any of the other described forms in the genus. In the *S. natalensis* group the cell-spot even when elongated into a band does not join the postmedian band, whereas the latter frequently joins the discal band. In *S. ella* the postmedian and discal bands, being perfectly parallel, never could unite.

78. VIRACHOLA ANTALUS Hopff.

♀, Mazoe District, 26th October 1894.

79. **Iolaus cæculus** Hopff.

♂, Gijima, 18th August; ♂ ♀, Gadzima, 18th October and 23rd December, 1895.

80. **Argiolaus trimeni** Wallgr.

Marudsi River, Mazoe District, 21st December, 1894; Gadzima, 17th September, 1895.

PAPILIONIDÆ.

PIERINÆ.

81. **Mylothris rüppellii** Koch.

♂, Enterprise Camp near Salisbury, 30th June, 1895.

The males of this species seem to be either very local or rare, as we previously had only one example received from the Godman and Salvin Collection.

82. **Nychitona medusa** var. **alcesta** Cram.

Malvern, 31st March, 1897.

83. **Colias hyale** var. **electra** Linn.

♂, Frere, 24th December, 1896.

84. **Terias brigitta** Cram.

Wet form. ♂, Marudsi River, 31st December, 1894; Salisbury, 16th March, 1895; ♂ ♀, Frere, 24th and 26th December, 1896; ♀, Estcourt, 30th December, 1896; ♂, Malvern, 31st February, 1897.

Dry form. ♀ ♀, Enterprise Camp near Salisbury, 23rd June, 1895; Gadzima, 1st September, 1895.

One of the females taken in June was labelled as a male, but the true dry-season male appears to be excessively rare.

85. **Terias marshalli** Butl.

Wet form. ♂ ♀, Karkloof, 5th and 13th February, 1897.

86. **Terias hapale** Mab. var. **æthiopica** Trim.

Dry form. Mazoe District, 23rd October, 1894; Enterprise Camp near Salisbury, 23rd June and 4th July; Gijima, 14th August, 1895.

I was amused to find some of the specimens labelled *T. æthiopica* and others *T. orientis*, others again altered from one to the other. As a matter of fact, *T. orientis* is the intermediate seasonal form of *T. senegalensis*, and identical with *T. butleri*; possibly Mr. Marshall might now consider the whole as one very variable species.

87. **Terias senegalensis** Boisd.

Wet form (as *T. butleri*). Salisbury, 12th January, 20th March, 5th May; Gadzima, 21st December, 1895.

88. Teracolus achine var. simplex Butl.

♂ ♀, Gijima, 8th and 18th August, 1895.

The female now sent is the first authentic example of this dry-season form of *T. achine* which I have seen; it is interesting as vaguely resembling the female of the northerly *T. isaura.*

Race T. trimeni Butl.

♂ ♂ (as *T. antevippe*), dry form, Upper Hanyani River, Mashonaland, 20th July, 1895.

89. Teracolus gavisa Wallgr.

♂ ♂, Estcourt, 30th December, 1896; 3rd and 24th January, 1897.

These are all typical wet-season examples.

90. Teracolus exole ♂ Reiche.

Malvern, 8th March, 1897.

The wet form of the male.

91. Teracolus annæ Wallgr.

Hartley Hills, Mashonaland, 24th, 26th, and 27th July, 1895.

The specimens belong to the dry form (*T. wallengrenii*), the female somewhat approaching that sex of the fulvous-tipped variation of the closely allied *T. callidia* (= *hildebrandti*).

92. Catopsilia florella Fabr.

♀ ♀, Salisbury, 21st and 25th April, 1895; ♂ ♂, Karkloof and Malvern, 19th February and 7th March, 1897.

93. Pinacopteryx pigea Boisd.

Malvern, 13th April, 1897.

94. Leuceronia argia Fabr.

♀, Karkloof, May 1896; ♂ ♂, February 1st to 11th, 1897.

All the Natal females sent us by Mr. Marshall are far more lightly marked on the upper surface than the more Northern, Eastern, and Western varieties, and all have the base of the primaries orange-vermilion above.

Papilioninæ.

95. Papilio corinneus Bert.

Gadzima, 25th September, 1895.

96. Papilio brasidas Feld.

Malvern, 27th March and 10th April, 1897.

I have always believed this to be the *P. anthemenes* of Wallengren, but I see that Trimen identifies the latter with *P. corinneus.*

97. PAPILIO OPHIDICEPHALUS Oberth.

Karkloof, 1st and 4th February, 1897.

98. PAPILIO EUPHRANOR Trim.

Karkloof, 5th February, 1897.

99. PAPILIO NIREUS Linn.

Karkloof, 9th and 13th February, 1897.

HESPERIIDÆ.

100. EAGRIS JAMESONI E. M. Sharpe. (Plate XX. fig. 7.)

Dry form, Gijima, 18th and 19th August; *wet form*, Gadzima, 22nd December, 1895[1].

101. SAPÆA TRIMENI Butl.

Gadzima, 25th September, 1895.

102. SAPÆA PARADISEA Butl.

Mazoe District, 29th December, 1894; Gadzima, 5th September, 1895.

103. ABANTIS VENOSA Trim.

Gijima, 18th August; Gadzima, 4th September, 1895. This is new to the Museum collection.

104. CAPRONA CANOPUS Trim.

Karkloof, 9th February, 1897.

105. PYRGUS SPIO Linn.

Loesskop, 4500 feet, Little Tugela River, 20th December, 1896; Estcourt, 1st January, 1897.

The first of these examples was labelled as "*Hesperia mafa*," and the following was queried as *H. mafa*; the two forms, if distinct, are very closely allied.

106. PYRGUS MAFA Trim.

Loesskop, 4500 feet, Little Tugela River, 20th December, 1896.

107. OXYPALPUS RUSO Mab.

Mazoe District, 27th October, 1894; Enterprise Camp, near Salisbury, 2nd July; Gadzima, 17th August and 19th September, 1895.

These were labelled as *O. harona* Westw., but we possess every link to typical *O. ruso* Mab.; the species is a very variable one, as I suspect the following also is.

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[1] The wet form has the ground-colour of the wings smoky brown instead of golden brown and ochraceous (see figure).

108. PAROSMODES ICTERIA Mab.

Enterprise Camp, near Salisbury, 7th July, 1895.

I have always believed this species to be the *P. ranoha* of Westwood (now considered synonymous with *P. morantii*, Trimen). The figure of the latter differs from it about as much as do the extreme variations of the preceding species.

109. PAROSMODES MORANTII Trim.

Gadzima, 19th September, 1895.

New to the Museum series. I should not be at all surprised to see intergrades between this species and *P. icteria*: the position of the orange band on the secondaries varies a good deal in our series of the latter species; but the coloration and pattern of the under surface, although very variable, still show sufficient differences to warrant the separation of the two butterflies for the present.

110. CYCLOPIDES METIS Linn.

Karkloof, 27th January, 8th and 11th February, 1897.

111. KEDESTES MACOMO Trim.

Malvern, 13th April, 1897.

112. KEDESTES TUCUSA Trim.

Estcourt, ♂ ♀ 13th, ♂ 14th January, 1897.

113. KEDESTES WALLENGRENII Trim.

Frere, 24th December, 1896.

114. KEDESTES NIVEOSTRIGA Trim.

Karkloof, 29th and 31st January, 11th February, 1897.

115. GEGENES LETTERSTEDTI Wallgr.

Estcourt, 1st January, 1897.

This is *G. hottentota* of authors other than Latreille, the latter being (as previously stated) the *G. obumbrata* of Trimen.

116. GEGENES HOTTENTOTA Latr.

♂, Salisbury, 10th March; ♀, 6th April, 1895; ♀, Estcourt, 3rd January, 1897.

The female of this species is new to the Museum collection. It seems hardly conceivable that a species the male of which has a large brand on the primaries can be a dimorphic form of one without a trace of a brand, but (as Dr. Holland observes) "the females are absolutely indistinguishable."

117. BAORIS AYRESII Trim.

Gadzima, 10th September, 1895.

New to the general series of the Museum collection, though represented by one example in the Hewitson series.

118. Parnara detecta Trim.

Mazoe District, 4th January, 1895.

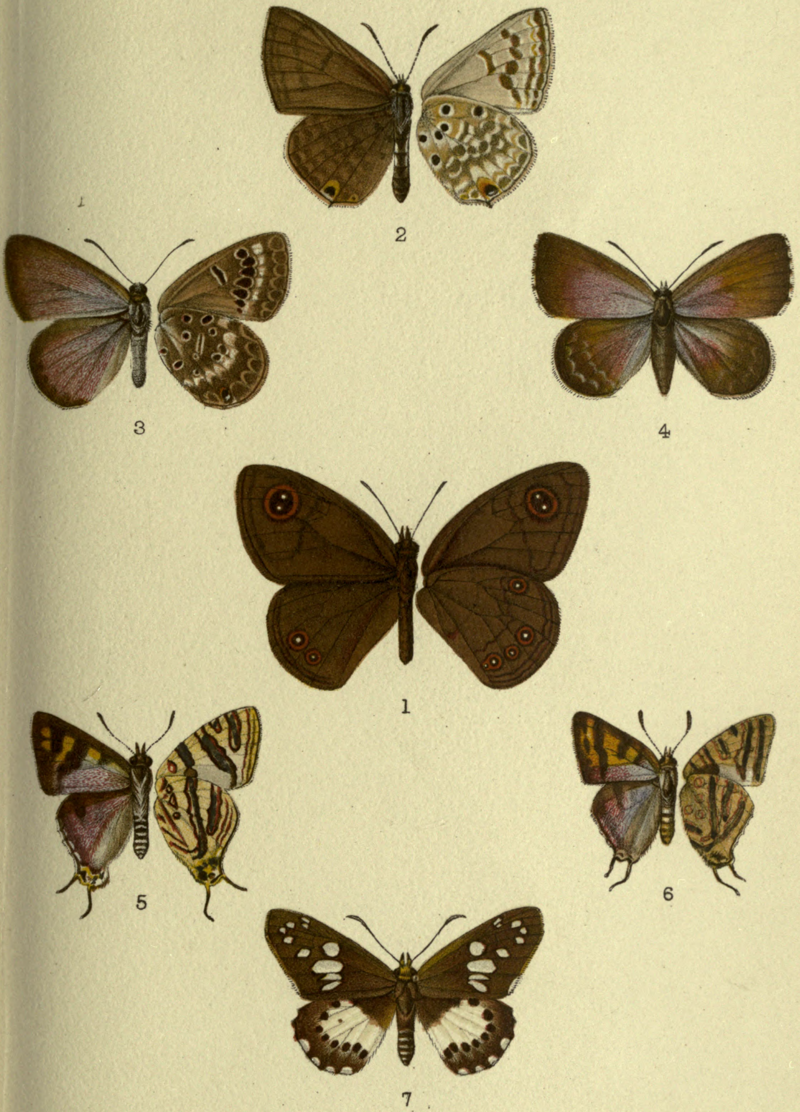
119. Baracus inornatus Trim.

Karkloof, 30th January and 8th February, 1897.

EXPLANATION OF PLATE XX.

Fig. 1. *Neocœnyra extensa*, ♂, p. 188.
2. *Catochrysops plebeia*, ♂, p. 192.
3, 4. *Catochrysops ariadne*, ♂ ♀, p. 193.
5. *Spindasis masilikazi*, ♂, p. 195.
6. *Spindasis ella*, ♂, var., p. 195.
7. *Eagris jamesoni*, ♂ (wet form), p. 199.

P. Z. S. 1898. Pl. XX.



E. C. Knight del. et lith.

West, Newman chromo.

Butterflies from Natal.

From the Annals and Magazine of Natural History,
Ser. 7, Vol. i., *April* 1898.

Descriptions of some new Species of Butterflies of the Subfamily Pierinæ. By Arthur G. Butler, Ph.D.

The following species in the Museum collection have hitherto remained unnamed:—

Mylothris bogotana, sp. n.

♀. Allied to *M. malenka*, but differing in the pattern of the primaries, the tawny discoidal and somewhat shorter submedian longitudinal streaks becoming sulphur-yellow at the extremities; beyond and well separated from these are two isolated yellow spots placed obliquely, and beyond the cell three elongated spots of the same colour in an oblique subapical series instead of the oblique quadrifid belt of *M. malenka.*

Expanse of wings 75 millim.

Santa Fé de Bogotá (*Stevens*). B. M.

This is not likely to be a variety of the Venezuelan species, as it is believed that in this group the variations of the female are not very great.

Elodina Walkeri, sp. n.

Allied to *E. perdita*, the male with shorter primaries; the apical patch always as broad as in *E. perdita* ♀, and not incised or dentated below the third median branch: apex of primaries below silvery, with three increasing blackish subapical spots in an oblique series; a sulphur-yellow subcostal streak from base, and in the discoidal cell a saffron-yellow suffusion: secondaries silvery white; a blackish dot at end of cell and four or five blackish discal spots in an obtusely angular series between the nervures.

Expanse of wings 38 millim.

Port Darwin (*J. J. Walker*). B. M.

We have six examples, of which five were collected by Mr. Walker; the sixth is one of our oldest specimens, the registered locality for which was simply "New Holland."

Elodina baudiniana, sp. n.

Also allied to *E. perdita*, but distinctly smaller and very uniform in pattern: above pearly snow-white; primaries with costal margin smoky greyish, basal half of costal border flesh-tinted, a rather narrow blackish apical patch, widest on costa (where it occupies about the external two-fifths of the margin) and tapering to extremity of second median branch, its inner edge dentated; a small and slightly browner spot at extremity of first median branch: below like the preceding species, but the black spots often very indistinct.

Expanse of wings 33–38 millim.

Baudin Island (*J. J. Walker*). B. M.

Of this species we have fourteen examples.

Terias Chamberlaini, sp. n.

♂. Bright gamboge-yellow; costal margin of primaries very delicately black, excepting towards the base; costa sprinkled with black scales to end of discoidal cell; extreme base of cell and of submedian vein marked by short black dashes; outer border narrowly dark brown, commencing at about two-fifths of the length from apex and tapering to extremity of first median branch, its inner edge zigzag from the third median branch hindwards: secondaries with a conspicuous pure white glandular patch towards base above the subcostal vein; veins terminating in very minute black dots followed by orange spots at the base of the fringe: body normal. Under surface gamboge-yellow, sparsely and very finely irrorated with brown atoms; a well-defined black spot at the end of each discoidal cell; fine black dots followed by orange angular markings terminating the veins, the orange markings uniting and covering the fringe towards apex of primaries; a pure white glandular patch between median and submedian veins towards base of primaries; a very indistinct **W**-shaped series of squamose brown spots crossing disk of secondaries.

Expanse of wings 30 millim.

Bahamas (*Neville Chamberlain*). B. M.

We only possess one male of this pretty little species. If Felder's statement was correct that his *T. smilacina* nearly approached *T. smilax* both in pattern and structure, this would be the second New-World species of the *T. læta* group; but an examination of Felder's description clearly shows that his species did not possess the glandular patches which characterize the *T. læta* group, and therefore was "wirklich nicht zunächst verwandt" to *T. smilax* (as he ought to have said).

May 1898

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, May 17, 1898.]

On a Collection of Lepidoptera made in British East Africa by Mr. C. S. Betton.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

(Plates XXXII. & XXXIII.)

Mr. Betton's collection is a singularly interesting one, rich in rare and new species, three Butterflies and twenty-six Moths from the present series being now described for the first time. Among the Butterflies also I may call attention to a suite of *Acræa chilo*, females of *A. crystallina*, the wet-season forms of both *Teracolus hetæra* and *T. puniceus*, the dry form of *T. leo*, a number of examples of *T. venata*, and an example of the rare *Alæna picata*, a species new to the Museum collection.

Although Mr. Betton desired to retain a collection for his private use, yet he sanctioned the whole of the types of new species, and examples of all species needed to perfect the National collection, being retained. Among the Heterocerous Lepidoptera, many of which were only represented by single specimens, he has thus suffered somewhat severely in the interests of science; but in the Butterflies there was considerably less required in proportion to the numbers collected.

Mr. Betton's line of march extended from Mombasa in a north-westerly direction by way of Samburu, Taru, Voi, and Ndi to Tsavo[1]. He has furnished the following notes on the weather prevailing at certain dates between March 1896 and August 1897, during which time his collection was made:—

1896.

March 1st–20th. Slight rain.

May 1st, "greater" rains commence; May 11th–13th, heavy and continuous rain: May 13th to end of month, slight rain.

June 21st–27th. Slight rain.

October 24th. Rains ("lesser") commence.

November 1st–15th. Heavy and continuous rains: rain nearly every day to end of month.

December. Showers nearly all the month.

1897.

February 18th–20th. Storms.

March 3rd, 4th, and 18th. Storms.

April 3rd and 4th. Storms.

April 14th–22nd. Slight rains.

May 16th–23rd. Slight rains.

July 8th and 9th. Heavy showers.

August 10th to 22nd. Slight rains occasionally.

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[1] See for map the Parliamentary Report on the Mombasa-Victoria Railway, 1898—Africa no. 8.

In working out some of the more obscure Moths, Sir George Hampson has kindly assisted me, both by the loan of pamphlets and by personal examination of structural characters.

The following is a list of the species obtained:—

I. RHOPALOCERA.

NYMPHALIDÆ.

1. AMAURIS DOMINICANUS.

Amauris dominicanus, Trimen, Trans. Ent. Soc. 1879, p. 323.

Mgana, 4th July, 13th and 30th August, 1896; Mombasa, January 1897.

2. AMAURIS OCHLEA.

Euplœa ochlea, Boisduval, App. Voy. de Deleg. dans l'Afr. Austr. p. 589 (1847).

Mombasa, 26th April, 1896.

Rather an unusually large female.

3. LIMNAS CHRYSIPPUS, var. KLUGI.

Limnas klugii, Butler, P. Z. S. 1885, p. 758.

♀, Samburu, British E. Africa, 15th November; ♂ ♀, Taru, Taru Desert, 13th, 16th, 18th, and 20th December, 1896; ♂, Voi, 1st May, 1897.

The specimen from Voi is about one-third larger than any of the others, and one of the specimens obtained on the 20th December is a transitional form towards var. *dorippus*, Klug.

4. MYCALESIS SAFITZA.

Mycalesis safitza, Hewitson, Gen. Diurn. Lep. p. 394, pl. 66. fig. 3 (1851).

♂ ♂, Chanjamwe, 28th July; ♂ ♂ ♀, Mgana, 28th August; ♂ ♀, Taru, 16th and 20th December, 1896; ♀, Mombasa, 7th January, 1897.

4 *a*. MYCALESIS EVENUS.

Mycalesis evenus, Hopffer, Monatsber. königl. Akad. Wiss. Berl. 1855, p. 641; Peters's Reise n. Mossamb. p. 394, pl. 25. figs. 5, 6 (1862).

Wet form. Mgana, 12th July, 1896.

Dry form (=*caffra*, Wallgr.). Taru, 19th December, 1896.

Mr. Trimen regards this as a variation of the preceding species, and I think it probable that he is right.

5. SAMANTA PERSPICUA.

Mycalesis perspicua, Trimen, Trans. Ent. Soc. Lond. 1873, p. 104, pl. 1. fig. 3 (♂).

♂ ♀, Chanjamwe, 28th July; ♂, Mgana, 28th August, 1896.

6. PHYSCÆNURA LEDA.

Periplysia leda, Gerstaecker, in Von der Decken's Reisen in Ost-Afrika, iii. 2, p. 371, pl. xv. figs. 3, 3*a* (1873).

Mgana, 6th, 13th, and 28th August, 1896; Maungu Inkubwa, 21st March, 1897.

7. MELANITIS SOLANDRA.

Papilio solandra, Fabricius, Syst. Ent. p. 500 (1775).

Dry-season ♀, Mgana, 6th August, 1896.

8. CHARAXES NEANTHES.

Nymphalis neanthes, Hewitson, Exot. Butt. i. p. 88, pl. 44. figs. 2, 3 (1854).

♀, Maungu Inkubwa, 21st March, 1897.

9. CHARAXES ZOOLINA.

♀. *Nymphalis zoolina*, Westwood and Hewitson, Gen. Diurn. Lep. pl. liii. fig. 1 (1850).

♂ ♂, Taru, 13th December, 1896; Maungu Inkubwa, 21st March, 1897.

10. CHARAXES CITHÆRON.

Charaxes cithæron, Felder, Wien. ent. Monatschr. iii. p. 398, pl. 8. figs. 2, 3 (1859).

♂ ♂, Maungu Inkubwa, 21st March, 1897.

11. CHARAXES VARANES.

Papilio varanes, Cramer, Pap. Exot. ii. pl. clx. D, E (1779).

♂ ♂, Maungu Inkubwa, 21st March, 1897.

12. JUNONIA LIMNORIA, var. TAVETA.

Precis taveta, Rogenhofer, Ann. Hof-Museum, Wien, vi. p. 460, pl. xv. fig. 7 (1891).

♂, Maungu Inkubwa, 21st March, 1897; ♀, Taru, 11th December, 1896.

A perfect pair of this species, of which we previously had a poor series.

13. JUNONIA GURUANA.

Precis guruana, Rogenhofer, Verh. zool.-bot. Gesellsch. Wien, xli. p. 564 (1891).

♂ ♀, Maungu Inkubwa, 21st March, 1897.

A nearly perfect pair of this rare butterfly. Looking at the variability of the allied *J. pelasgis*, it seems possible that this may be an extreme form of the preceding species.

14. JUNONIA AURORINA.

Junonia aurorina, Butler, P. Z. S. 1893, p. 651, pl. lx. fig. 3.

♂ ♂ ♀ ♀, Maungu Inkubwa, 21st March, 1897.

One very shattered male nearly approaches *J. pyriformis* in colouring, and shows the intensely dry character of that insect on the under surface. It will be remembered that in 1896 (P. Z. S. p. 111) I suggested the possibility of the latter being a form of *J. aurorina*. As the fact that the latter and *J. tugela* fly together in the wet-season in S. Africa seems to disprove the statement that they are seasonal forms of one species, it would appear more probable that *J. pyriformis* is the dry form of *J. aurorina*, the single example of the former in this collection having evidently been a considerable time on the wing; however, we need more evidence before deciding this point, especially as all three of these species have dry-season undersides to the wings.

15. JUNONIA CUAMA.

Junonia cuama, Hewitson, Exot. Butt. iii., *Jun.* pl. i. figs. 4, 5 (1864).

♀, Maungu Inkubwa, 21st March, 1897.

16. JUNONIA CEBRENE.

Junonia cebrene, Trimen, Trans. Ent. Soc. Lond. 1870, p. 353.

♂, Samburu, 19th November; ♀ ♀, Taru, 16th December, 1896; ♂ ♀, Maungu Inkubwa, 21st March, 1897.

17. JUNONIA CLELIA.

Papilio clelia, Cramer, Pap. Exot. i. pl. xxi. E, F (1775).

♂, Mombasa, 4th January, 1897.

18. JUNONIA NATALICA.

Precis natalica, Felder, Wien. ent. Monatschr. iv. p. 106 (1860).

Taru, 16th December, 1896.

19. PROTOGONIOMORPHA NEBULOSA.

Salamis nebulosa, Trimen, Trans. Ent. Soc. Lond. 1881, p. 441.

♂ ♀, Mgana, B. E. Africa, 13th and 28th August, 1896.

This is the Eastern form of *P. aglatonice*, from which the male differs very little, the apical black area of the primaries being only slightly broader. I take *P. aglatonice* to be the Western type, the female of which more nearly resembles the male. A third form differing to about the same extent is *P. definita* of Madagascar, which I formerly confounded with males of *P. nebulosa*.

20. PYRAMEIS CARDUI.

Papilio cardui, Linnæus, Faun. Suec, p. 276 (1761).

Mgana, 2nd September, 1896.

21. HYPOLIMNAS MISIPPUS.

Papilio misippus, Linnæus, Mus. Lud. Ulr. p. 264 (1764).

♂ ♂, Taru, 16th and 20th December, 1896; Mombasa, January 4th; ♂ ♀ ♀, Maungu Inkubwa, March 21st, 1897.

22. EURALIA KIRBYI.

Euralia kirbyi, Butler, P. Z. S. 1898, p. 51.

Mgana, 11th August, 1896 (one damaged male).

The sudden appearance in recent collections of this fine species is curious; last year we received two specimens in Mr. Kirby's collection and two from Sir H. Johnston, obtained at Zomba.

23. EUXANTHE WAKEFIELDII.

Godartia wakefieldii, Ward, Ent. Month. Mag. x. p. 152 (1873); Afr. Lep. pl. 6. fig. 3 (1874).

♂ ♀, Mgana, 2nd and 11th August, 1896.

24. HAMANUMIDA DÆDALUS.

Papilio dædalus, Fabricius, Syst. Ent. p. 482 (1775).

Dry form. ♂, Samburu, 26th October, 1896.

Wet form. ♂ ♂ ♀ ♀, Taru, 18th and 19th December, 1896, 17th January, 1897.

25. EUPHÆDRA VIOLACEA.

Euryphene violacea, Butler, P. Z. S. 1888, p. 91.

♂ ♂, Mombasa, 4th January, and Voi, 1st May, 1897.

Two tolerably good examples of this beautiful species.

26. LACHNOPTERA AYRESII.

Lachnoptera ayresii, Trimen, Trans. Ent. Soc. Lond. 1879, p. 326; South Afr. Butt. i. pl. iii. figs. 5, 5 *a* (1887).

♀, Maungu Inkubwa, 21st March, 1897.

One very worn example only was obtained.

27. ATELLA COLUMBINA.

Papilio columbina, Cramer, Pap. Exot. iii. pl. ccxxxviii. A, B, iv. pl. cccxxxvii. D, E (1782).

Chanjamwe, 31st May, 1896; Mombasa, 7th January, 1897.

28. NEPTIS AGATHA.

Papilio agatha, Cramer, Pap. Exot. iv. pl. cccxxvii. A, B (1782).

Mombasa, 7th January, 1897.

29. NEPTIS MARPESSA.

Neptis marpessa, Hopffer, Monatsb. königl. Akad. Wiss. Berl. 1855, p. 640; Peters's Reise n. Mossamb., Ins. p. 383, pl. xxiv. figs. 9, 10 (1892).

Maungu Inkubwa, 21st March, 1897.

30. EURYTELA FULGURATA.

Libythea fulgurata, Boisduval, Faun. Madag. p. 52, pl. 8. fig. 5 (1833).

Mgana, 19th July, 1896.

Only one shattered example was obtained; it does not differ from Malagasy specimens.

31. EURYTELA DRYOPE.

Papilio dryope, Cramer, Pap. Exot. i. pl. lxxviii. E, F (1779).

Mombasa, 7th January, 1897.

32. BYBLIA ILITHYIA.

Papilio ilithyia, Drury, Ill. Exot. Ent. ii. pl. 17. figs. 1, 2 (1773).

♂, Mgana, June 22nd; ♂ ♀, Taru, December 13th and 18th, 1896; ♂, Voi, May 2nd, 1897.

The whole of the specimens belong to the typical "wet-season" phase: it must be a long wet season to last from the middle of December to near the end of June!

33. PLANEMA MONTANA.

Planema montana, Butler, P. Z. S. 1888, p. 91.

Acræa bertha, Vuillot, Novit. Lep. xii. pl. xix. fig. 5 (1895).

Maungu Inkubwa, 21st March, 1897.

One good male of this rare species.

34. ACRÆA METAPROTEA, var. JACKSONI.

♀. *Planema jacksoni*, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 335; Waterhouse, Aid Ident. Ins. pl. clxxxix. fig. 1 (1890).

♂, Maungu Inkubwa, 21st March, 1897.

In males of this Eastern variety the subapical band of primaries is separated by a long interval from the internal patch, as in the Western varieties of the species.

35. ACRÆA SERENA, var. PERRUPTA.

Telchinia perrupta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 102 (1883).

♂ ♀, Mombasa, 4th and 7th January, 1897.

This variation is barely separable from *A. serena*, var. *buxtoni*; but the male of the latter is usually more brightly coloured, with blacker borders and the black lunate patch closing the cell of the primaries never tending to join the outer borders by means of an intermediate spot: the females of both are extremely variable.

36. ACRÆA LYCIA and vars.

Papilio lycia, Fabricius, Syst. Ent. p. 464 (1775).

Voi, April 15th and May 1st, 1897.

Var. SGANZINI, Boisduval.

Voi, April 15th and May 2nd, 1897.

Var. DAIRA, Godman.

Voi, April 15th and May 1st and 2nd, 1897.

Not only is there one perfectly intermediate specimen between the variety *A. sganzini* and typical *A. lycia*, but a male of the variety *A. sganzini* was taken on May 2nd *in copulâ* with the variety *A. daira*.

37. ACRÆA CÆCILIA, var. STENOBEA.

Acræa stenobea, Wallengren, Wien. ent. Monatschr. iv. p. 35 (1860).

♀, Taru, 18th December, 1896.

This specimen much interests me; it is the first example of this variety which I have seen from Eastern Africa, has the colouring of the male, but with all the black spots of typical *A. cæcilia*; it thus fully confirms the correctness of my decision in sinking *A. stenobea* as a mere variety (or, possibly, seasonal form) of *A. cæcilia*.

38. ACRÆA NATALICA.

Acræa natalica, Boisduval, App. Voy. de Deleg. p. 590 (1847).

♂ ♀, Mayera, 20th July; ♀, Mgana, 26th July, 1896.

39. ACRÆA BRÆSIA.

Acræa bræsia, Godman, P. Z. S. 1885, p. 538.

Voi, 1st and 2nd May, 1897.

40. ACRÆA CHILO.

Acræa chilo, Godman & Salvin, P. Z. S. 1880, p. 184, pl. xix. figs. 4, 5.

♂, Maziwa-Mitatu, 24th March; Voi, 1st and 2nd May, 1897.

One of the characteristics of typical *A. chilo* is the strongly concave outer margin to its primaries, but in Mr. Betton's series every gradation exists to a distinctly convex outer margin.

41. ACRÆA ANEMOSA.

Acræa anemosa, Hewitson, Exot. Butt. iii. pl. 8. figs. 14, 15 (1865).

♀, Samburu, 15th November, 1896; ♂, Voi, 1st May, 1897.

42. ACRÆA NEOBULE.

Acræa neobule, Doubleday & Hewitson, Gen. Diurn. Lep. pl. xix. fig. 3 (1848).

♀, Maungu Inkubwa, 21st March; ♂, Ndara Hills, 6th April, 1897.

43. ACRÆA CRYSTALLINA.

♂. *Acræa crystallina*, H. Grose-Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 167 (1890); Rhop. Exot. i., *Acræa*, pl. iii. figs. 3, 4 (1892).

♀ ♀, Voi, 1st and 2nd May, 1897.

This species is entirely new to the Museum collection.

44. PARDOPSIS PUNCTATISSIMA.

Acræa punctatissima, Boisduval, Faune Ent. Madag. p. 31, pl. 6 fig. 2 (1833).

Mgana, 30th August, 1896.

LYCÆNIDÆ.

45. ALÆNA PICATA.

Alœna picata, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. xvii. p. 126 (1896).

♂, Voi?, B. E. Africa[1].

No exact habitat accompanied the single example of this rare species; it is quite new to the Museum collection.

46. PARAPONTIA SUBPUNCTATA.

Teriomima subpunctata, Kirby, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 364 (1887); Grose-Smith & Kirby, Rhop. Exot. i., *Afric. Lyc.* pl. iii. figs. 11, 12 (1888).

♂ ♂, Taru, 16th December, 1896.

Only two males of this rare species were obtained; it is quite new to the Museum collection. It is now evident that this is an Eastern (not Western) species, and an examination of its neuration and other structural characters, as well as a comparison of the markings of the under surface, make it evident that it is nearly related to *Parapontia undularis*. Mr. Betton's specimens are slightly larger and more distinctly washed with buff on the costal and apical areas of the primaries and the secondaries upon the under surface than in the type.

47. TINGRA AMENAIDA.

Pentila amenaida, Hewitson, Exot. Butt. v., *Pent. & Lipt.* pl. 2. figs. 4–7 (1873).

Mgana, 13th August; Taru, 13th, 18th, and 19th December, 1896.

This species is exceedingly variable on both surfaces; the black border of the primaries above is sometimes reduced to an apical patch, that of the secondaries being reduced to a row of spots or wholly absent, whilst on the under surface the submarginal row of spots is either faintly indicated or entirely wanting. If only single examples of the extreme types were received, they would be unhesitatingly described as distinct species: I have no doubt that *T. nero* and *T. bertha* are varieties, for we have exactly similar specimens, but with smaller spots, whilst the size of the spots is unquestionably extremely variable.

48. DURBANIA HILDEGARDA.

Teriomima? hildegarda, Kirby, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 357 (1887); Grose-Smith & Kirby, Rhop. Exot. i., *Afric. Lyc.* pl. iv. figs. 7, 8 (1888).

Var. *Teriomima freya*, Grose-Smith & Kirby, Rhop. Exot. ii., *Afric. Lyc.* pl. xxv. figs. 1, 2 (1894).

Mgana, 27th June and 13th July; Samburu, 10th November;

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[1] It was amongst a number of Lepidoptera obtained at Voi; it therefore probably came from that locality.

Taru, 16th, 19th, and 20th December, 1896; Mombasa, 7th January, 1897.

The variation of the markings of the upper surface in this species is considerable and may be thus described:—

1.—*Primaries.* Costal markings not entering the discoidal cell, but forming a K-shaped marking immediately beyond cell; outer border wide on costa, rapidly tapering and becoming linear after second median branch, not reaching external angle.

Secondaries. Outer border extremely narrow. Mgana.

2.—*Primaries.* Costal markings extending quite across discoidal cell and completely confluent with outer border, which tapers gradually to external angle and extends a short distance along the inner margin. In this variety the outer border occupies about a third of the wing.

Secondaries. Outer border broad in the centre, squamose at both extremities. One shattered and worn starved example. Mgana.

3.—*Primaries.* Costal markings extending across discoidal cell, but separated from outer border, which is slightly narrower than in var. 1, but continued to inner margin.

Secondaries. With tolerably broad outer border of nearly uniform width (typical *D. hildegarda*). Samburu.

4.—*Primaries.* Costal markings as in var. 1, but outer border continued to inner margin.

Secondaries. Outer border distinctly narrower than in var. 3, and especially towards anal angle. Taru.

5.—Like var. 3, excepting that the outer borders of all the wings are broader (typical *D. freya*). Taru.

It is difficult to find two specimens which exactly agree in pattern.

49. POLYOMMATUS BÆTICUS.

Papilio bœticus, Linnæus, Syst. Nat. i. 2, p. 789 (1767).

♂, Taru, 18th December, 1896.

50. CATOCHRYSOPS OSIRIS.

Lycæna osiris, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters's Reise n. Mossamb. v. p. 409, pl. 26. figs. 11, 12 (1862).

♀, Mgana, 30th August, 1896; ♂, Maungu Inkubwa, 21st March, 1897.

Only one unusually large pair was obtained.

51. CATOCHRYSOPS PERPULCHRA.

Lycæna perpulchra, Holland, Entomologist, 1892, Suppl. p. 90; Proc. U.S. Nat. Mus. vol. xviii. p. 239, pl. vii. fig. 7 (1895).

♀, Mombasa, 7th January, 1897.

This is an unusually white example; we possess a similar, though more worn, example from Zomba. My original type of *C. hypoleucus* from the Victoria Nyanza appears to be a distinct species; it is considerably larger, the under surface tinted with buff, all the black spots larger; two additional spots to the discal series of primaries, the lower half of the submarginal stripe of primaries blackish, and that of the secondaries commencing with two short black bars placed angle to angle; a few black scales are also sprinkled on the other divisions of this stripe.

52. CATOCHRYSOPS HIPPOCRATES.

Papilio hippocrates, Fabricius, Ent. Syst. iii. p. 288 (1793).

♀, Mgana, 13th August, 1896.

53. CUPIDOPSIS JOBATES.

Lycæna jobates, Hopffer, Ber. Verh. Ak. Berlin, 1855, p. 642; Peters's Reise n. Mossamb. v. p. 408, pl. 26. figs. 9, 10 (1862).

Mgana, 30th August, 1896; Mombasa, 4th January, 1897.

54. AZANUS JESOUS.

Polyommatus jesous, Guérin, Lefebvre's Voy. Abyss. vi. p. 383, pl. 11. figs. 3, 4 (1847).

♀, Mgana, 28th June, 1896; ♂ ♂, Voi, 1st May, 1897.

55. TARUCUS PLINIUS.

Hesperia plinius, Fabricius, Ent. Syst. iii. 1, p. 284 (1793).

♀ ♀, Taru, 22nd November and 20th December, 1896.

56. NACADUBA SICHELA.

Lycæna sichela, Wallengren, Kongl. Svenska Vetens.-Akad. Handl. 1857; Lep. Rhop. Caffr. p. 37.

♂, Voi, 1st May, 1897.

57. ZIZERA GAIKA.

Lycæna gaika, Trimen, Trans. Ent. Soc. Lond. ser. 3, vol. i. p. 403 (1862).

Mgana, 13th August and "20th December (N. P. D.)," 1896. N. P. D. are probably the initials of the captor, as Mr. Betton, at the time, was at Taru.

58. CASTALIUS MELÆNA, var.

Lycæna melæna, Trimen, South-Afr. Butt. ii. p. 82.

Voi, 1st May, 1897.

An extraordinay specimen of what I take to be a very melanistic form of this species, in which the spots on the primaries above are greatly reduced in size and the white area of the secondaries is only represented by an irregular central band: on the under surface the markings are slightly thicker and blacker, but otherwise are identical with those in South-African specimens. We are so badly off for this species that it is possible that similar varieties of the species may occur also in Natal. Until I compared the under-surface pattern in the two insects, I imagined that they would prove to be quite distinct.

59. LYCÆNA KERSTENI.

Lycæna kersteni, Gerstaecker, in Von der Decken's Reisen in Ost-Afrika, iii. 2, p. 373, pl. xv. fig. 5 (1873).

♂ ♂, Taru, 20th December, 1896; Voi, 1st May, 1897.

This is the Eastern representative of *L. larydas*; it has much more white on the under surface.

60. LYCÆNESTHES SYLVANUS.

Papilio sylvanus, Drury, Ill. Exot. Ent. ii. pl. iii. figs. 2, 3 (1773).

♂ ♂, Mgana, 13th August, 1896.

These are the first examples from Eastern Africa which I have hitherto seen; unfortunately only one pair was obtained.

61. LYCÆNESTHES AMARAH.

Polyommatus amarah, Guérin in Lefebvre's Voy. Abyss. vi. p. 384, pl. 11. figs. 5, 6 (1847).

♂, Mgana, 12th July, 1896.

62. ZERITIS AMANGA.

Zeritis amanga, Westwood in Oates's Matabele-land, p. 351 (1881).

♀, Taru, 20th December, 1896; ♂, Voi, 2nd May, 1897.

The specimen of the female differs from our single imperfect Abyssinian example in the pattern of the primaries; the male, however, undoubtedly varies not a little.

63. ZERITIS HARPAX.

Papilio harpax, Fabricius, Syst. Ent., App. p. 829 (1775).

♂ ♀, Mwachi River, June 7th; ♀, Mgana, August 30th, 1896.

Var.? ♂ with red patch on primaries confined to internal area; secondaries of both sexes slightly less heavily bordered; silver spotting on under surface of secondaries considerably less prominent and (in the female) on a paler background.

♂ ♀, Mgana, 12th July, 1896.

It is just barely possible that the variety noted above may be distinct from typical *Z. harpax*, but I do not believe it is so; we have received the same form from Nyasaland. I also do not believe it possible to separate *Z. perion* from *Z. harpax*, the differences given to distinguish them by Mr. Trimen being undoubtedly unreliable.

LEPTOMYRINA, gen. nov.

Nearly related to typical *Myrina* (*M. silenus*, &c.), having the same general wing outline and neuration; it differs in its comparatively longer and far more slender antennæ with abruptly thickened club, rather more slender palpi, and the considerably shorter and more delicate tails to the secondaries. Type *L. phidias*, Fabr. (*rabe*, Boisd.).

64. LEPTOMYRINA HIRUNDO.

Thecla hirundo, Wallengren, Kongl. Svenska Vetensk.-Akad. Handl. 1857, p. 35 (*Amblypodia h.*); Trimen, Rhop. Afr. Austr. ii. p. 230, pl. 4. fig. 11 (1866).

Maungu Inkubwa, 21st March, 1897.

This is the most southern example of *L. hirundo* that I have heard of; our two examples are both from Natal.

65. VIRACHOLA LIVIA ?

Lycæna livia, Klug, Symb. Phys. pl. 40. figs. 3–6 (1834).

♂, Mgana, 12th July, 1896.

The male is somewhat shattered, but differs remarkably from Arabian examples, all the markings below being bright mahogany-red with blackish margins and whitish borders; the internal area of primaries buff.

66. VIRACHOLA LORISONA, var.

Myrina lorisona, Hewitson, Ill. Diurn. Lep. p. 37, pl. 16. figs. 48, 49 (1863).

♂, Mgana, 12th July, 1896.

The single example obtained differs so much from Hewitson's type in the pattern of the upper surface, that, if we had not possessed an intermediate specimen from West Africa, I should have concluded that this Eastern variety must be distinct: the secondaries would be best described as bright orange tawny, the base, abdominal border, and a submedian streak smoky greyish brown; the usual bright blue subcostal sexual spot; outer border narrowly dark brown, slightly widest at apex: the orange patch on the primaries is also much larger than in typical *V. lorisona*. This is the first example which I have seen from East Africa.

67. VIRACHOLA DIOCLES.

Deudorix diocles, Hewitson, Ill. Diurn. Lep., Suppl. p. 12, pl. v. figs. 55, 56 (1869).

♂, Mgana, 26th July; ♀, Mayeras, 20th July, 1896.

A single pair of this rare species was obtained; it is new to the general Collection. The female above is smoky greyish-brown, the primaries with a diffused ashy patch between the cell and the submedian vein; the secondaries with a similar patch on the median and lower radial interspaces; the anal lobe is externally golden orange, the usual internal black spot being sprinkled with silvery blue scales: otherwise, excepting in its rounder wings, it much resembles females of *V. livia*.

68. VIRACHOLA DARIAVES.

Deudorix dariaves, Hewitson, Ent. Month. Mag. xiii. p. 205 (1877).

♂, Mgana, 23rd July, 1896.

Also new to the general Collection.

69. VIRACHOLA ANTALUS.

Dipsas antalus, Hopffer, Monatsb. königl. Akad. Wissensch. Berlin, 1855, p. 641.

Sithon antalus, Peters's Reise n. Mossamb., Ins. p. 400, pl. xxv. figs. 7–9 (1862).

♂ ♀, Mgana, 13th August, 1896.

70. IOLAUS PHILIPPUS.

Hesperia philippus, Fabricius, Ent. Syst. iii. 1, p. 283 (1793).

♀, Mgana, 13th August; ♂ ♀, Taru, 19th December, 1896; ♂ ♂ ♀ ♀, Mombasa, 7th January, 1897.

71. IOLAUS PACHALICUS.

Hypolycæna pachalica, Butler, P. Z. S. 1888, p. 69.

♀, Chanjamwe, British East Africa, 31st May; ♂ ♂, Taru, December 20th, 1896; Mombasa, 7th January, 1897.

72. ARGIOLAUS SILARUS.

Iolaus silarus, H. H. Druce, Ent. Month. Mag. vol. xxii. p. 154 (1885).

♂ ♂, Taru, 18th December, 1896, and 1st February, 1897; ♀, Ndara Hills, 7th April, 1897.

This beautiful species, of which unfortunately only three examples were obtained, is quite new to the Museum collection.

PAPILIONIDÆ.

73. MYLOTHRIS AGATHINA.

Papilio agathina, Cramer, Pap. Exot. iii. pl. ccxxxvii. D, E (1782).

♂ ♀, Mgana, 2nd & 6th August; Taru, 16th December, 1896.

74. NYCHITONA MEDUSA, var. ALCESTA.

Papilio alcesta, Cramer, Pap. Exot. iv. pl. ccclxxix. A (1782).

Mgana, 22nd June, 2nd & 11th August, 1896; Mombasa, 4th January; Maungu Inkubwa, 21st March, 1897.

After arranging the fine combined series of the Museum and Godman and Salvin collections, I have been forced to the conclusion that, at most, the genus *Nychitona* consists of two very variable species—*N. medusa* (African) and *N. xiphia* (Asiatic): but, even then, several of the forms of each species are barely, if at all, distinguishable. In Kirby's Catalogue Cramer's incorrect locality 'Coast of Bengal' is adopted for *N. medusa*; but the insect figured is of a purely African variety and was probably received from Sierra Leone.

75. TERIAS BRIGITTA, var. ZOE.

Terias zoe, Hopffer, Ber. Verh. Akad. Berl. 1855, p. 640; Peters's Reise n. Mossamb. v. p. 369, pl. 23. figs. 10, 11 (1862).

♂, Chanjamwe, 28th July, 1896; ♂, Manjewa, 13th January, 1897.

76. TERIAS SENEGALENSIS.

Terias senegalensis, Boisduval, Sp. Gén. Lép. i. p. 672 (1836).

♂ ♂, Taru, 16th & 19th December, 1896.

Var. BISINUATA, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 485 (1876).

♀ Samburu, 15th November, 1896.

77. TERACOLUS CALAIS.

Papilio calais, Cramer, Pap. Exot. i. pl. liii. C, D (1779).

♂ ♀, Taru, 13th & 18th December, 1896; Voi, 1st May, 1897.

78. TERACOLUS ERIS.

Pontia eris, Klug, Symb. Phys., Ins. pl. vi. figs. 15, 16 (1829).

♀. *Teracolus abyssinicus*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 486 (1876).

Wet form. ♂ ♂ ♀ ♀, Taru, 22nd November, 13th, 16th, 19th, & 20th December, 1896; 17th January, 1897.

Intermediate form. ♂ ♂ ♀, Maziwa-ya-Tayau, 16th February, 1897.

The eighteen examples obtained by Mr. Betton show the usual uniformity of pattern characteristic of the Northern species of this group, and are all readily separable from the Southern, East-Central, and Western species, which Mr. Marshall proposed to unite under one name: only one example of the yellow female (to which I gave the name of *T. abyssinicus*) was obtained; indeed yellow females of the *T. eris* group seem to be rare.

79. TERACOLUS PUNICEUS.

♂. *Teracolus puniceus*, Butler, P. Z. S. 1888, p. 72; ♂ ♀, 1894, pl. xxxvi. figs. 5, 6.

♂ ♂, Taru, 16th & 18th December, 1896.

80. TERACOLUS HETÆRA.

♂. *Callosune hetæra*, Gerstaecker, Arch. für Naturg. 1871, p. 357; Von der Decken's Reisen in Ost-Afrika, iv. 2, p. 365, pl. xv. fig. 2 (1873).

♂ ♂ ♀ ♀, Taru, 16th, 18th, & 20th December, 1896.

The wet form of the male and the yellow form of the female of this species are new to the Museum series. Most of the specimens are of wet or intermediate types, but one female combines a wet-season upper surface with an extreme dry form of under surface.

81. TERACOLUS IMPERATOR.

Teracolus imperator, Butler, P. Z. S. 1876, p. 132.

♂ ♂, Mgana, 28th August; ♀, Samburu, 15th November; ♂ ♂ ♀ ♀, Taru, 18th to 20th December, 1896.

A ♀ whitish-spotted black-tipped form of the wet-season phase as well as a magenta-glossed crimson-tipped example (both new to me) were in the series.

82. TERACOLUS BETTONI, sp. n.

♂. *Teracolus phlegyas* (part), Butler, cf. P. Z. S. 1894, p. 574.

This species at all seasons differs from the preceding in the extremely narrow and much more glistening lilac apical patch or band on the primaries of the male, its black inner edging almost or wholly wanting, and in the deep indentation or complete separation of the internal black stripe on the primaries of the female; the latter sex is either white or yellow, the apical area being either crossed by an orange patch or a row of white spots as in *T. imperator.* The dry form of the male differs chiefly from the wet form in the rosy colouring of the apex of the primaries and the whole surface of the secondaries on the under surface, whilst extreme wet types of the male are not only pearly white below, but show an oblique discal series of black spots between the costal vein and second median branch on the underside of the secondaries: the female of the dry phase resembles the wet form of *T. phlegyas* on the upperside and the dry form of that species on the underside; it is, however, larger and shows heavier black markings. Expanse of wings, ♂ 58–71 millim., ♀ 62–69 millim.

Wet form. ♂ ♂ ♀ ♀, Taru, 24th & 25th November, 15th, 18th, 19th, & 20th December, 1896 (one pair taken *in copulâ*).

Intermediate form. ♂, Mgana, 2nd August, 1896.

Small, and with white unspotted under surface.

Dry form. ♀, Ndara Hills, 7th April, 1897.

Fifteen examples were in Mr. Betton's collection.

83. TERACOLUS INCRETUS.

Teracolus incretus, Butler, Ent. Month. Mag. xviii. p. 146 (1881).

♀ ♀, Mgana, 30th August, and Samburu, 15th November; ♂, Taru, 18th December, 1896.

84. TERACOLUS EVARNE.

Pontia evarne, Klug, Symb. Phys. pl. vi. figs. 1–4 (1829).

Wet form. ♂ ♂, Mombasa, 7th January, 1897.

Intermediate form. ♂, Mgana, 27th June, 1896 (= *T. syrtinus*).

Dry form. ♂, Voi, 4th July, 1897 (= *T. citreus*).

85. TERACOLUS HEUGLINI (vars. T. THRUPPI & JACKSONI).

Teracolus thruppi, Butler, P. Z. S. 1885, p. 770, pl. xlvii. fig. 10 (Intermediate form.)

Teracolus jacksoni, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 336 (1890). (Wet form.)[1]

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[1] The two forms seem to occur together at the commencement and end of the wet season, so far as I can judge; but they differ very little. A more marked intermediate form may perhaps exist.

♂ ♀, Mgana, 19th July, 13th & 30th August; ♂, Samburu, 26th October; ♂ ♂ ♀ ♀, Taru, 13th, 18th, & 20th December, 1896.

86. TERACOLUS XANTHUS.

Teracolus xanthus, Swinhoe, P. Z. S. 1884, p. 440, pl. xxxix. fig. 10.

Wet form. ♂ ♂, Taru, 13th & 20th December, 1896; Mombasa, 7th January, 1897.

Intermediate form. ♂ ♂, Samburu, 26th October and 6th November, 1896.

87. TERACOLUS ANTEVIPPE.

Anthocharis antevippe, Boisduval, Sp. Gén. Lép. i. p. 572 (1836).

Extreme wet form (var. *subvenosus*, Butler). ♂ ♂, Mgana, 28th August, 1896; Mombasa, 7th January; Manjewa, 13th January, 1897.

88. TERACOLUS GAVISA.

Anthopsyche gavisa, Wallengren, Lep. Rhop. Caffr. p. 13 (1857).

♂ ♀, Samburu, 15th November; ♀, Taru, 18th December, 1896.

89. TERACOLUS EXOLE.

Anthocharis exole ♂, Reiche, Ferr. & Gal. Voy. Abyss. pl. xxxi. fig. 4 (1849).

Intermediate form (var. *roxane*, Felder). ♂ ♀, Taru, 22nd November and 16th December, 1896.

As these were sent in one envelope it is probable that they were taken *in coitu*. This is an argument in favour of the distinctness of *T. exole* from *T. omphale*: the male is imperfect.

90. TERACOLUS OMPHALE.

Pieris omphale, Godart, Enc. Méth. ix. p. 122 (1819).

Wet form. ♂ ♂, Mgana, 13th & 28th August; Samburu, 1st November; ♀, Taru, 13th December, 1896; ♂, Mombasa, 7th January; Maungu Inkubwa, 21st March, 1897.

91. TERACOLUS PSEUDACASTE.

Teracolus pseudacaste, Butler, P. Z. S. 1876, p. 156, pl. vi. fig. 11.

Intermediate form. ♂ ♂, Samburu, 26th & 28th October, 6th November; ♂ ♀, 15th November, 1896.

Wet form. ♂ ♂, Taru, 16th December, 1896; Mombasa, 7th January, 1897, ♀ same date.

The female from Mombasa is the blackest and most interesting variety that I have seen.

92. TERACOLUS LEO.

Teracolus leo, Butler, Ann. & Mag. Nat. Hist. ser. 3, vol. xvi. p. 397 (1865).

Wet-season form. ♀, Taru, 19th December, 1896.

Dry-season form. ♀, Mbuyuni, 14th June, 1897; ♂ ♂, Voi, 4th July, 1897.

The dry form is quite new to science (excepting for the single starved and faded male without locality noted in my Revision of the genus, *cf.* Ann. & Mag. Nat. Hist. ser. 6, vol. xx. p. 501, 1897). The male at this season chiefly differs from that of the wet-season in the bluer tint of the grey basal area of the primaries, but the orange is sometimes carried above the first median branch and the dusky submarginal markings are sometimes wanting; the underside differs in its flesh-coloured suffusion, which is very well-defined at apex of primaries and over the basal, costal, and internal areas of the secondaries. The female of the dry form resembles *T. cœlestis* of Swinhoe (the dry form of the female of *T. halimede*), but has the discal black spots across the primaries widely separated from the outer border by a broad intervening belt of the yellow ground-colour: on the underside the apex of the primaries and the whole of the secondaries are fleshy brown, and the transverse spots are much darker than in *T. cœlestis.*

93. TERACOLUS VENOSUS.

♂. *Idmais venosa*, Staudinger, Exot. Schmett. p. 43, pl. xxiii. (1885); ♀, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 759 (1896).

♂ ♂ ♀ ♀, Taru, 22nd November; 13th, 16th, 18th, & 19th December, 1896.

This species was badly needed for the Museum series; therefore I was pleased to find that Mr. Betton had secured a fair number of specimens.

94. TERACOLUS HELVOLUS, var.

Teracolus helvolus, Butler, P. Z. S. 1888, p. 94.

♀, Mbuyuni, 7th April; ♂, Voi, 25th April; between Voi and Ndi (88 miles from Mombasa), 16th May; Voi, 4th July, 1897.

These specimens are particularly interesting; they are almost as large as *T. aurigineus,* but of the exact pattern and coloration of the dry form of *T. helvolus.* We have corresponding examples of the wet form obtained at Kilimanjaro; a specimen of the latter from Mombasa, however, scarcely differs in size from Somali examples.

95. TERACOLUS CATACHRYSOPS.

Teracolus catachrysops, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ii. p. 178 (1878).

Dry form. ♀, Chanjamwe, 18th June, 1896.

Wet form. ♂ ♂ ♀, Mombasa, 4th January, 1897.

I now have another proof of the absurdity of calling this very distinct species a variety of *T. mutans*, inasmuch as the dry form is seen to differ from the wet chiefly in the redder colouring of the bands on the under surface, whereas in *T. mutans* the whole under surface of the secondaries and of the apex of primaries becomes clay-coloured with a pink suffusion, the bands being indistinct.

96. TERACOLUS PROTOMEDIA.

Pontia protomedia, Klug, Symb. Phys., Ins. pl. viii. figs. 13, 14 (1829).

♂ ♂ ♀, Taru, 20th December, 1896.

97. CATOPSILIA FLORELLA.

Papilio florella, Fabricius, Syst. Ent. p. 479 (1775).

♂, Chanjamwe, 10th June; ♂ ♀, Taru, 18th & 19th December, 1896; ♂ ♀, Maungu Inkubwa, 21st March; ♂ ♂, Ndara Hills, 6th & 7th April, 1897.

98. PHRISSURA LASTI.

Mylothris lasti, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 124 (1889); Rhop. Exot. ii. *Belen.* pl. ii. figs. 1–3 (1892).

♂, Mgana, 26th July; ♂ ♀, 13th August, 1896.

99. BELENOIS THYSA.

Pieris thysa, Hopffer, Ber. Verh. Akad. Berl. 1855, p. 639; Peters's Reise n. Mossamb., Ins. p. 349, pl. xxi. figs 7–10 (1862).

♂ ♀, Mgana, 2nd August, 1896.

100. BELENOIS CREONA.

Papilio creona, Cramer, Pap. Exot. i. pl. xcv. C–F (1779).

♂ ♀, Mgana, 13th July; ♂ ♂, Chanjamwe, 28th July; Taru, 20th December, 1896; and Voi, 1st May, 1897.

101. BELENOIS MESENTINA, var. LORDACA.

Pieris lordaca, Walker, Entomologist, 1870, p. 48.

♂ ♂ ♀ ♀, Maziwa-ya Tayau, 8th to 17th February, 1897.

Mr. Betton took no less than twenty-eight examples of this abundant species, most of them having been caught on the 16th February.

102. BELENOIS GIDICA.

Pieris gidica, Godart, Enc. Méth. ix. p. 131 (1819).

♂ ♂, Mgana, 28th June; Taru, 18th & 19th December, 1896; Maungu Inkubwa, 21st March, 1897.

All four specimens (including that obtained at the end of June) are of the wet-season phase.

103. GLUTOPHRISSA CONTRACTA, var.

Glutophrissa contracta, Butler, P. Z. S. 1888, p. 75.

Dry form. ♂ ♀, Mgana, 12th July, 1896.

A rather shattered pair was obtained, but the specimens are of great interest to us as showing the seasonal modification of the species. The dry form somewhat resembles *G. flavida* of Madagascar (which is doubtless the dry form of *G. malatha*), but it differs in the well-defined outer border on the upperside of the secondaries and in the character of the male, which does not differ from wet-season examples of *G. contracta.*

104. PINACOPTERYX LILIANA.

Belenois liliana, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. iii. p. 122 (1889); Rhop. Exot. ii. pl. i. figs. 7–9 (1893).

♂. Mgana, 22nd June; ♀, Samburu, 15th November, 1896.

105. HERPÆNIA MELANARGE.

Herpœnia melanarge, Butler, P. Z. S. 1885, p. 774.
Herpœnia iterata, Butler, P. Z. S. 1888, p. 96.

Dry-season form (*H. melanarge*). ♂, Mgana, 26th July, 1896.

Wet-season form (*H. iterata*). ♀, Taru, 22nd November, ♂ 16th December, ♀ 19th December, 1896.

106. LEUCERONIA BUQUETII.

Callidryas buquetii, Boisduval, Sp. Gén. Lép. i. p. 607 (1836).

Taru, 13th, 19th, & 20th December, 1896; Voi, 1st May, 1897.

107. ERONIA DILATATA.

Eronia dilatata, Butler, P. Z. S. 1888, p. 96.

Mgana, 6th, 11th, & 30th August; Samburu, 26th October; Taru, 22nd November, 13th & 16th December, 1896; Maungu Inkubwa, 21st March, 1897.

The dry form has slightly narrower black borders to the wings and a slightly deeper-coloured underside than the wet form.

108. ERONIA LEDA.

Dryas leda, Boisduval, App. Voy. de Deleg. p. 588 (1847).

♂ ♂ ♀, Maungu Inkubwa, 21st March, 1897.

109. PAPILIO CORINNEUS.

Papilio corinneus, Bertoloni, Mem. Acc. Bologna, 1849, p. 9, pl. i. figs. 1–4.

Chanjamwe, 14th June, 1896; Mombasa, 4th January, 1897.

110. PAPILIO PHILONOE.

Papilio philonoe, Ward, Ent. Month. Mag. x. p. 152 (1873).

Mombasa, 7th January; Maungu Inkubwa, 21st March, 1897.

111. Papilio demoleus.

Papilio demoleus, Linnæus, Mus. Lud. Ulr. p. 214 (1764).

Taru, 18th & 20th December, 1896; Mombasa, 4th January; Maungu Inkubwa, 21st March; between Voi and Ndi, 19th May, 1897.

112. Papilio constantinus.

Papilio constantinus, Ward, Ent. Month. Mag. viii. p. 34 (1871); Afric. Lep. i. pl. i. figs. 1, 2 (1873).

Two pairs, Maungu Inkubwa, 21st March, 1897.

113. Papilio nireus.

Papilio nireus, Linnæus, Mus. Lud. Ulr. p. 217 (1764).

♀, Mombasa, 4th January; ♂ ♂ ♀, Maungu Inkubwa, 21st March, 1897.

I must confess that I see no possible reason for separating this variable species under two distinctive names.

114. Papilio merope (var. dardanus, Brown).

Papilio merope, Cramer, Pap. Exot. ii. pl. cli. A, B (1779).

♂ ♂ ♀, Maungu Inkubwa, 21st March, 1897.

Although I do not consider that the Eastern type should be regarded as identical with the Western, it is more convenient (until the forms of so-called *P. merope* have been thoroughly studied) to retain this name for them all. The Southern form is apparently identical with the Eastern one, but the true *P. merope* of Cramer seems to me to be the West-African type with black-and-white female. The corresponding Eastern form is that now received, the female being also of the black-and-white type, but the male differing in constantly having a broad continuous black belt across the secondaries; it thus comes nearest to the male of *P. cenea*, which Mr. Trimen regards as a variety of the same species; perhaps he has proved this point, but it seems odd for the same insect to mimic two totally dissimilar *Danainæ*.

HESPERIIDÆ.

115. Sarangesa eliminata.

Sarangesa eliminata, Holland, P. Z. S. 1896, p. 9, pl. v. fig. 2.

Taru, 22nd November and 20th December, 1896; Voi, 22nd April, 2nd May, and 22nd June, 1897.

The specimen obtained on the 22nd April is a distinct intergrade to *S. pertusa*, and I believe, when the species of this group are better understood, it will be found impossible to separate most of the species of the *S. motozi* group; they are simply ridiculously close, whilst (so far as I can judge from our poor series) they probably all occur together. We have *S. pertusa*, *S. synestalmenus*, and *S. motozioides* occurring with *S. motozi* in Nyasaland; *S. per-*

tusa and *S. motozi* in South Africa; *S. pertusa* var. and *S. eliminata* in British East Africa at the same spot; we have *S. pertusa* from Aden, and *S. eliminata* from Abyssinia. Altogether these forms do not look like good distinct species.

116. SARANGESA DJÆLÆLÆ.

Pterygospidea djælælæ, Wallengren, Kongl. Svensk. Vetensk.-Akad. Handl. 1857; Lep. Rhop. Caffr. p. 54.

Maungu Inkubwa, 21st March, 1897.

117. PYRGUS BETTONI, sp. n. (Plate XXXII. fig. 1.)

Nearest to *P. zebra* and *P. asterodia*, but not very closely allied to any African species known to me, and on the upper surface somewhat resembling the New-World *P. asychis.* Upper surface black-brown; a white spot near the base of each discoidal cell; a central interrupted white belt, not reaching the borders of the wings, commencing with a subcostal dot on the primaries, where it is divided into three quadrate spots by the first and second median branches, oblique and terminating in a subconfluent dot on the secondaries; a transverse trifid subapical white bar on the primaries, and a single small spot on the second median interspace; submarginal series of dots unequal, the first, second, and fifth extremely minute; in the secondaries the first, fourth, fifth, and sixth extremely minute; fringe white, varied with blackish at the extremities of the veins: body normal. Primaries below dark greyish, but with the usual copper-brown reflections; white spots broader and more confluent than above, internal border greyish white; secondaries with the basal two-thirds and abdominal border white; a spot across the base of the cell and a broad irregular oblique belt from near base of costa across the cell, a short central costal streak and a spot just below the latter, greyish olivaceous; external third occupied by a broad belt of the same colour, slightly flecked with whitish and grey at apex and towards anal angle (so as vaguely to indicate the pale outer border which occurs in *P. zebra*); fringe of all the wings white, spotted with grey. Body below sordid white, the venter rather purer than the pectus. Expanse of wings 24 millim.

Maungu Inkubwa, 21st March, 1897.

118. PYRGUS DROMUS.

Pyrgus dromus, Plötz, Mitth. naturw. Vereins, 1884, p. 6.

Mgana, 30th August, 1896.

Unfortunately only a single example of this pretty little *Pyrgus* was obtained.

119. PAROSMODES ICTERIA.

Pamphila icteria, Mabille, C.R. Soc. Ent. Belg. vol. xxxv. p. clxxx (1821).

Mgana, 5th July, 13th & 30th August, 1896.

120. BAORIS FATUELLUS.

Pamphila fatuellus, Hopffer, Monatsber. k. Akad. Wissensch. Berl. 1855, p. 643; Peters's Reise n. Mossamb., Ins. p. 417, pl. xxvii. figs. 3, 4 (1862).

Mwachi River, 7th June, 1896.

121. BAORIS AURITINCTUS, sp. n. (Plate XXXII. fig. 2.)

Form of *B. fatuellus*, primaries with exactly similar transparent white spots; an elliptical patch below the median vein and the commencement of its first branch, a small spot above the submedian vein (representing the white spot frequently present in *B. fatuellus*), and a pilose internal streak bronzy ochraceous, the whole wing-surface also glossed with golden bronze: secondaries more distinctly glossed with golden, the long hair clothing the discoidal and internal areas to the centre of the disc being bronzy ochraceous; two unequal subapical transparent yellowish spots placed obliquely; fringes of all the wings smoky brown, tipped with bone-white excepting towards apex of primaries. Body of the ordinary type, blackish with bronzy green reflections on head and thorax and golden cupreous reflections on abdomen; a shoulder-spot and a spot on each side of the head, close to the eyes, ochreous; antennæ bronze tipped with purplish black. Under surface brownish grey, densely irrorated with ochraceous excepting on the internal areas: otherwise very like *B. fatuellus*. Expanse of wings 34 millim.

Taru, 20th December, 1896.

Only one example obtained.

122. CERATRICHIA STELLATA.

Ceratrichia stellata, Mabille, C.R. Soc. Ent. Belg. 1891, p. lxv.

Mgana, 13th & 28th August, 1896.

I quite agree with Dr. Holland that this species differs from typical *Ceratrichia* in its shorter antennæ, &c., but I do not like it a bit better in *Cyclopides* (which it is not half so much like in pattern). As Dr. Holland has not proposed a new generic location for it, I prefer, for the present, to let the species rest where M. Mabille placed it.

123. RHOPALOCAMPTA FORESTAN.

Papilio forestan, Cramer, Pap. Exot. iv. pl. cccxci. E, F (1782).

Ndara Hills, 7th April, 1897.

The Moths in the collection are not in such good condition as the Butterflies, but most of them are recognizable; some are of great beauty and quite new to the Museum collection; others we had previously only received from South Africa or from the West coast. As might be expected, not a few are new to science. The following is as complete an account of them as could be made.

II. HETEROCERA.

SYNTOMIDÆ.

124. APISA CANESCENS.

Apisa canescens, Walker, Lep. Het. iv. p. 917 (1855).

Camp near 119 miles inland from Mombasa, 7th July, 1897.

The single female example is smaller than any example of that sex which I have hitherto seen, but we have no East-African specimens obtained further north than Natal. It is just possible that this may be a small race of the species, as Sir George Hampson informs me that he has seen a male from East Africa still smaller than the female now received.

125. EUCHROMIA AMŒNA.

Euchromia amœna, Moeschler, Stett. ent. Zeit. xxxiii. p. 350 (1872).

Mayera, 17th July; Taru, 20th December, 1896.

This is the species which I called *E. africana*; Herr Moeschler erroneously gave Silhet as its habitat.

ARCTIIDÆ.

126. ALOA BIVITTATA, sp. n. (Plate XXXII. fig. 3.)

Most nearly allied to *A. punctistriga* from India. Primaries cream-coloured, the costal border and veins pale testaceous; a black dot at base of submedian veins, and a black dot on the lower discocellular vein pierced by a longitudinal blackish-brown streak which runs to outer margin; a second short and more slender streak, in the areole above it, also running to outer margin; secondaries pure white. Antennæ white with black pectinations; head ochreous, becoming chalky white at sides and back of collar; thorax chalky white; abdomen ochreous, white at base and with dorsal transverse black bars, of which the first and seventh are widest and the fourth to sixth most delicate; a black spot on each side of anal segment. Wings below white, the primaries with buff costal borders; pectus white, smoky brown in front; legs smoky brown, the hind femora pale ochreous in front; venter white, with a blackish lateral stripe not extending over the last two segments. Expanse of wings 41 millim.

Mbana, 28th June, 1896.

Only one example was obtained.

127. LACYDES ARBORIFERA.

Lacydes arborifera, Butler, Cist. Ent. ii. p. 26 (1875).

Samburu, 1st November, 1896.

Previously only recorded from West Africa.

128. LACYDES GRACILIS, sp. n. (Plate XXXII. fig. 4.)

♀. Allied to *L. vocula* and *L. smithii* (*Conchylia smithii*, Holland):

primaries comparatively narrower[1], pale cupreous brown; a silvery white costal streak from base tapering to a point just before the basal third; the remainder of costal area unmarked almost to apex, where a silvery white band commences, runs obliquely to the upper radial (vein 6), where it joins a longitudinal discoidal streak tapered at each extremity and commencing in the cell just beyond the termination of the costal streak; a longitudinal interno-median streak tapering towards the base and confluent on outer margin, with a short narrower stripe above the first median branch, thus forming a kind of L-shaped character; above the latter along the outer border is a cuneiform patch of silvery white, deeply incised at third median branch; base of internal border white, terminated by an oblique spot of brown slightly darker than the ground-colour, beyond which is a whitish patch; secondaries pearly white, unspotted. Body much rubbed, but probably very similar to that of *L. vocula*. Under surface of wings as above, excepting that the ground-colour of the primaries is a little paler and greyer. Expanse of wings 35 millim.

Marago ya Fundi, Taru desert, 2nd March, 1897.

Unfortunately only one example was obtained, but it seems to differ too much from either of the species above noted to be a variety; the absence of the white costal markings and the much more regular character of the markings seem likely to be trustworthy distinctions.

I am quite unable to identify the following with any genus of *Lithosiinæ*:—

BETTONIA, gen. nov.

Nearest to *Dictenus* (Butl.), general aspect of *Eubaphe*; the palpi extremely small, slender, directed forwards; proboscis short but well-developed; antennæ (of female) about one-third the length of primaries, simple, somewhat thick; primaries elongate-triangular, costal vein running to second third of costa; subcostal five-branched, the second and third from a long footstalk, the fourth and fifth from a short footstalk; secondaries with the subcostal branches from a long footstalk; the other veins all well separated at their origins. Type *B. ferruginea*.

129. BETTONIA FERRUGINEA, sp. n. (Plate XXXII. fig. 5.)

♀. Tawny ferruginous; primaries above with a slightly greyish tinge and a black spot in the centre of the discoidal cell; all the wings with a black discocellular spot. Expanse of wings 20 millim.

♀, Voi, 2nd May, 1897.

130. LEXIS BIPUNCTIGERA.

Lithosia bipunctigera, Wallengren, Wien. ent. Monatschr. 1860, p 45.

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[1] This is, however, probably only a sexual character.

Lexis bipunctigera, Wallengren, *l. c.* 1863, p. 146.

Setina quadrinotata, Walker, Cat. Lep. Het. xxxi. p. 237 (1864).

♀, Maungu Inkubwa, 21st March, 1897.

Of this species we only possess Walker's rather imperfect type from Natal; it is, therefore, a welcome addition.

The genus *Lexis* is allied to *Sozuza*, although the pattern of *L. bipunctigera* ♀ reminds one rather forcibly of that of *Œonistis quadra* ♀ (to which it is certainly not closely related). It is characterized as distinct from *Sozuza* by the absence of the postdiscoidal areole (or false cell) in the primaries, by the much greater length of the costal vein, with which the first subcostal branch anastomoses; the third and fourth branches emitted as in *Sozuza*, but the fifth branch emitted from the fourth instead of from before the emission of the third. In the secondaries the so-called second and third median branches (now recognized as the second median and lower radial) form a much shorter furca than in *Sozuza*.

NYCTEMERIDÆ.

131. TERINA TENUIS.

Aletis tenuis, Butler, P. Z. S. 1878, p. 385.

Terina fulva, Hampson, Ann. & Mag. Nat. Hist. ser. 6, vol. vi. p. 183 (1891).

Mgana, 13th August, 1896.

A beautiful species of which we should have been glad to obtain examples; unfortunately Mr. Betton only secured one.

132. PITTHEA TRIFASCIATA.

Türckheimia trifasciata, Dewitz, Verh. Leop.-Carol. Akad. xlii. p. 82, pl. 3. fig. 3 (1881).

♀, Mgana, 13th August, 1896; ♂ ♀ ♀, Mombasa, 4th & 7th January, 1897.

133. SECUSIO STRIGATA.

Secusio strigata, Walker, Cat. Lep. Het. ii. p. 550 (1864).

Taru, ♀ ♀, 22nd November and 19th December, 1896.

134. LEPTOSOMA LEUCONOE.

Nyctemera leuconoe, Hopffer, Monatsber. königl. Akad. Wissensch. Berlin, 1857, p. 422; Peters's Reise n. Mossamb., Ins. p. 430, pl. xxviii. fig. 3 (1862).

Mgana, 22nd June and 12th July; Taru, 19th December, 1896.

135. LEPTOSOMA FALLAX?

Nyctemera fallax, Holland, Ent. News Philad. 1893, p. 59.

♂, Taru, 17th January, 1897.

We only have a single female of this species in the Museum collection; the present male does not seem to differ more from it than the sex would account for; but, as the type of *L. fallax* was from the West, I feel no certainty of the specific identity of the two insects.

AGARISTIDÆ.

136. ÆGOCERA TRICOLOR.

Ægocera tricolor, Druce, Ent. Month. Mag. vol. xx. p. 155 (1883).

Samburu, 10th & 15th November, 1896; between Voi and Ndi, 22nd May, 1897.

The last example obtained is of interest on account of the distortion of the subapical patch across the right primary. It seems to me not at all unlikely that this may prove to be only a form of *Æ. leucomelas* with orange secondaries; a similar variation in colouring occurs in the very closely related *Æ. trimeni* and in *Æ. triplagiata.*

NOCTUIDÆ.

137. EUPLEXIA OPPOSITA.

Mamestra opposita, Walker, Cat. Lep. Het. xxxii. p. 667 (1865).

Mbuyuni, 29th May, 1897.

138. AMYNA SELENAMPHA.

Amyna selenampha, Guenée, Noct. i. p. 406 (1852).

Samburu, 28th October, 1896.

One rather rubbed example of this abundant species was obtained.

139. TARACHE UPSILON.

Calophasia upsilon, Walker, Cat. Lep. Het. xxxiii. p. 763.

Samburu, 2nd November; Taru, 24th November, 1896, 21st January, 1897.

140. TARACHE PORPHYREA, sp. n.

General pattern of both sexes similar to that of *T. tropica*; coloration of primaries nearer to *T. ardoris* but more clouded. Primaries of male with the basal two-thirds bone-whitish, clouded and transversely banded with plumbeous grey, varied with olivaceous; a black spot at end of cell, but none in the cell, the pale area terminating beyond the cell in the usual pale-edged blackish olivaceous ℨ-shaped character impinging upon the external third, which is glistening sepia-brown; the external border faintly indicated excepting at the extremity of the median areoles and at the external angle, where it becomes whitish; the two patches connected internally by a zigzag whitish line; a marginal series of black dots, barely visible excepting upon the pale patches: secondaries silky smoke-brown, a little darker on outer border and slightly cupreous in certain lights. Thorax whitish, more or less varied with greyish; abdomen whitish or grey, that of the female sometimes grey, with the posterior borders of the segments buff.

Wings below glistening grey, the internal area of primaries whitish, the costal border and external margin in the female varied with ochreous; the secondaries in this sex also somewhat paler, slightly yellowish towards costa, especially from the middle, and crossed by an irregular oblique subapical grey band; a dark grey spot at end of cell: body below milk-white, tibiæ and tarsi barred with grey. Expanse of wings 19–20 millim.

♂ ♀, between Voi and Ndi, 88 miles from Mombasa, 4th June, 1897.

In 1884 we received a slightly smaller pair of this species from Accra; but these are all that I have seen of it.

141. TARACHE sp.

♀. Probably new, but too imperfect to describe; it is nearly related to a very beautiful unnamed female (also from British East Africa) in the Museum collection; but differs in so many details of colouring, that I cannot venture to regard it as a variety of that insect: also, in this genus, in which the sexes often differ to a marvellous degree, it is not satisfactory to describe from a female alone.

♀, between Voi and Ndi, 4th June, 1897.

142. TARACHE ADMOTA.

Acontia admota, Felder, Reise der Nov., Lep. v. pl. cviii. fig. 31 (1875).

Samburu, 31st October, 1896.

I have previously seen this insect from extreme North and from South Africa; but it is new to us from East Africa. In fresh examples the markings on the primaries are bright olive-green; the figure in the 'Novara Voyage' is not characteristic.

143. POLYDESMA UMBRICOLA.

Polydesma umbricola, Boisduval, Faune Ent. de Madag., Lép. p. 108, pl. 13. fig. 5.

♀ ♀, Voi, 2nd May and 16th July; between Voi and Ndi, 18th May, 1897.

Two damaged females of *Ericeia inangulata*, Guen., were obtained at Samburu (Oct. 26th) and Taru (Nov. 28th).

144. CYLIGRAMMA LATONA.

Phalæna (*Noctua*) *latona*, Cramer, Pap. Exot. i. p. 20, pl. xiii. B (1779).

Samburu, 17th & 20th November; Taru, 22nd, 24th, & 28th November, 6th & 9th December, 1896; between Voi and Ndi, 18th May, 1897.

145. CYLIGRAMMA FLUCTUOSA.

Phalæna (*Noctua*) *fluctuosa*, Drury, Ill. Exot. Ent. ii. p. 24, pl. xiv. fig. 1.

Var. *Cyligramma rudilinea*, Walker, Cat. Lep. Het. xiv. p. 1311 (1857).

Var. *Cyligramma limacina*, Guérin, Icon. Règne Anim., Ins. pl. 89. fig. 2, texte p. 520.

Mgana, 5th & 6th August; three miles north of Samburu, 23rd October; Taru, 20th, 22nd, 23rd, 24th, & 28th November, 1896.

Three examples agreeing with *C. limacina*, the remainder intermediate between the latter and *C. rudilinea*; therefore typical. This form of the species is new to the Museum collection.

146. DYSGONIA ABNEGANS, var.

Ophiusa ? abnegans, Walker, Cat. Lep. Het. xv. p. 1831 (1858).

Mgana, 27th July and 30th August, 1896.

Neither of the two specimens obtained quite agrees with Walker's type from Sierra Leone, though one is nearer than the other. It is very important to secure these aberrant examples, as only thus can we hope to comprehend the variability of the species in this genus (which at times is considerable). I am quite satisfied that *D. neptunia* of Holland is Walker's *D. conjunctura*, and I am not at all certain that *D. palpalis* of Walker is more than a variety of the same species.

In the Eastern specimens of *D. abnegans* before me the band forming the inner limitation of the bicoloured central belt on the primaries is less inarched at costa, though more so in one example than in the other; the subapical markings vary individually.

147. DYSGONIA ANGULARIS.

Ophiusa angularis, Boisduval, Faune Ent. de Madag., Lép. p. 103, pl. 13. fig. 2.

Mgana, 27th July, 1896; Mombasa, 8th January; between Voi and Ndi, 18th May, 1897.

New to the Museum series from Eastern Africa.

148. ACHÆA LIENARDI.

Ophiusa lienardi, Boisduval, Faune Ent. de Madag., Lép. p. 102, pl. 15. fig. 5.

Taru, 20th December, 1896.

149. GRAMMODES STOLIDA.

Noctua stolida, Fabricius, Sp. Ins. ii. p. 218.

Machuma, 21st February, 1897.

New to the Museum from East Africa.

150. SPHINGOMORPHA MONTEIRONIS.

Sphingomorpha monteironis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xvi. p. 406 (1875).

Mkwajuni, 20th & 21st October; three miles north of Samburu, 23rd October; Taru, 6th December, 1896.

151. GNAMPTONYX TREFOLIATA, sp. n.

General aspect of an *Acronycta*, but belonging to the quadrifid group of *Noctuidæ*. Primaries earthy brown, sprinkled all over with pale lavender scales; an ill-defined, dusky, oblique costal streak entering discoidal cell just above the orbicular spot, which is whitish, outlined in black; the reniform stigma is represented by a large irregular black-edged marking, not unlike a hawthorn or trefoil leaf with the mid-rib directed inwards to below the orbicular spot; an oblique costal streak at apical fourth, external border ashy lavender, its inner margin widely and deeply sinuated between costa and first median branch, but diffused below the latter; a vague indication of a dusky annulus on inner margin near external angle; a series of small black submarginal spots; fringe whitish, sprinkled with earthy-brown scales; secondaries sericeous white with a very faint fleshy tint; the external area dust greyish; a marginal series of black dashes; fringe white at base, greyish externally: head brownish grey, collar less brown, ashy in front and at the sides; thorax ashy; abdomen buffish white irrorated with grey. Wings below white, slightly buffish and irrorated with dark brown scales on costal and apical areas; a marginal series of blackish spots; secondaries with a dusky spot on upper discocellular: body below sordid buffish white; front of pectus, palpi and legs above brownish irrorated with blackish, the tarsi with white tips to the joints. Expanse of wings 60 millim.

Between Voi and Ndi, 2nd June, 1897.

Unfortunately only one example of this species was obtained. I am indebted to Sir George Hampson for pointing out its affinities; despite its dissimilarity from the type of his genus *Gnamptonyx*, it corresponds with it so closely in structure that I have no doubt of its correct location.

152. BANIANA INTORTA.

Baniana intorta, Swinhoe, Trans. Ent. Soc. 1891, p. 150; Hampson, Ill. Typ. Het. ix. pl. 163. fig. 3.

♀, Taru, 23rd November, 1896.

New to the Museum from Eastern Africa, though we have it from Natal and Accra.

153. COLBUSA PENTAGONALIS.

Colbusa pentagonalis, Butler, P.Z.S. 1894, p. 589, pl. xxxvii. fig. 8.

Samburu, 7th November, 1896.

A larger and better example than the type, and therefore a desirable acquisition.

154. TRIGONODES HYPPASIA.

Phalæna-Noctua hippasia, Cramer, Pap. Exot. iii. pl. ccl. E (1782).

Mbuyuni, 25th April; between Voi and Ndi, 20th & 22nd May; Voi, 26th June, 1897.

155. **Remigia archesia.**

Phalæna-Noctua archesia, Cramer, Pap. Exot. iii. p. 145, pl. cclxxiii. F, G (1782).

Mgana, 27th July and 18th August, 1896.

156. **Remigia repanda.**

Noctua repanda, Fabricius, Ent. Syst. iii. 2, p. 49 (1793).

Mgana, 27th July, 20th, 27th, & 30th August, 1896.

157. **Entomogramma nigriceps.**

Renodes ? nigriceps, Walker, Cat. Lep. Het. xv. p. 1595 (1858).

Mgana, 5th August, 1896.

158. **Ophiodes finifascia.**

Nephelodes finifascia, Walker, Cat. Lep. Het. xv. p. 1676 (1858).

Taru, 4th February, 1897.

One imperfect example.

159. **Pasipeda roseiventris.**

Asymbata roseiventris, Gerstaecker, in Von der Decken's Reisen in Ost-Afrika, iii. 2, p. 378, pl. xv. fig. 8 (1873).

♂, Voi, 30th April; ♀, between Voi and Ndi, 4th June, 1897.

The male is the first example of that sex which I have seen; the species seems to be rare, though nearly related to the common Indian *P. satellitia*; possibly it has simply not been collected.

160. **Halastus divitiosus.**

Ophideres divitiosa, Walker, Proc. Nat. Hist. Soc. Glasgow, vol. i. p. 356, pl. vii. fig. 11 (1869).

Machuma, 22nd February, 1897.

161. **Argadesa materna.**

Phalæna-Noctua materna, Linnæus, Syst. Nat. ii. p. 840 (1767).

♂, Samburu, 15th November, 1896; ♀, Maungu Inkubwa, 21st March, 1897.

162. **Cosmophila erosa.**

Anomis erosa, Hübner, Exot. Schmett. Zutr. ii. p. 19, figs. 287, 288.

♀, Samburu, 16th November, 1896.

163. **Hypocala deflorata, var. plumicornis.**

Hypocala plumicornis, Guenée, Noct. iii. p. 75 (1852).

Samburu, 14th November, 1896.

164. **Plusia eriosoma.**

Plusia eriosoma, Doubleday in Dieffenbach's New Zealand, i. p. 285 (1843).

Samburu, 7th, 8th, & 16th November; Taru, 22nd November & 20th December, 1896.

This abundant species seems to be almost cosmopolitan.

165. RISOBA OBSTRUCTA.

Risoba obstructa, Moore, P. Z. S. 1881, p. 328; Lep. Ceylon, iii. p. 2, pl. cxliv. figs. 2, 2 *a*, 2 *b* (1884).

Samburu, 2nd November, 1896.

This is quite new to the African fauna.

166. GONITIS SABULIFERA.

Gonitis sabulifera, Guenée, Noct. ii. p. 404 (1852).

Mgana, 30th August; Samburu, 31st October, 4th & 7th November; Taru, 24th, 27th, & 28th November, 9th December, 1896.

Many of the specimens belong to the variety named by Walker *G. involuta*. The species is new to us from East Africa, though we have it both from Abyssinia and Natal.

167. MARASMALUS DISCISTRIGA.

Eutelia discitriga (sic), Walker, Cat. Lep. Het. xxxiii. p. 823 (1865).

Samburu, 4th November; Taru, 1st December, 1896.

I have never previously seen this species from Eastern Africa, but we have it from Aden, and therefore it probably is to be found in the extreme North.

168. ZETHES BETTONI, sp. n.

Closely allied to *Z. hesperioides*, having exactly the same outline, structure, and nearly the same pattern; it is, however, distinctly smaller; the peculiar hatchet-shaped central belt across the primaries is pale buffish, flesh-tinted or greyish, with the borders of the lower half very black in fresh specimens; the pale costal dots are sometimes much whiter than in the species from Java and Burma, and the subquadrate costal patch towards apex paler and therefore less prominent; the submarginal line on all the wings is whitish with dark brown borders; on the under surface the resemblance to *Z. hesperioides* is again very great, but the basal area is paler, the narrow dark-bordered transverse central band usually paler, sometimes quite white, the discal belt sometimes much darker than in any specimens of the larger species. Expanse of wings, ♂ 31–32 millim., ♀ 29–32 millim.

Taru, 1st, 6th, & 9th December, 1896.

169. EGNASIA VICARIA.

Thyridospila vicaria, Walker, Cat. Lep. Het. xxxv. p. 1972 (1866).

Mgana, 1st August, 1896.

170. RAPARNA LIMBATA, sp. n.

♀. Primaries above pale coffee reddish, sericeous; the costal border whity brown; external border narrowly and unevenly pale grey-brownish bounded internally by a partly zigzag, partly widely sinuous, white submarginal line, the latter bounded internally towards apex and towards external angle by a diffused dusky patch; central area of wing enclosed by two indistinct crenulated grey lines, the inner one interrupted in the cell by a white 'orbicular' dot; reniform stigma also white, partly edged with leaden grey; a marginal series of black dots: secondaries pale smoky brown, sericeous, slightly greyer towards outer margin; fringes of all the wings grey inclining to blackish, with whity-brown basal line. Head and collar whity brown, somewhat pearly; thorax flesh-reddish; abdomen whity brown. Under surface sericeous whity brown, the wings irrorated with greyish and with dusky marginal dots. Expanse of wings 25 millim.

Taru, 2nd February, 1897.

Unfortunately only one example of this very distinct species was obtained.

171. HYPENA VULGATALIS.

Hypena vulgatalis, Walker, Cat. Lep. Het. xvi. p. 82 (1858).

Samburu, 2nd November, 1896.

A single somewhat worn specimen, but new to us from Eastern Africa.

172. OPHIUCHE MASURIALIS.

Hypena masurialis, Guenée, Delt. et Pyral. p. 38 (1854).

Samburu, 8th & 12th November, 1896.

New to us from East Africa, though we have it from the North, South, and West.

173. RHYNCHINA TARUENSIS, sp. n.

Intermediate in character between *R. plusioides* and *R. antiqualis*, nearest to the latter, slightly larger and browner; a black or dark brown patch filling the interval between the black orbicular spot and the linear white 'reniform stigma,' and a second smaller black spot filling the angle of the inner angulated white transverse line; the costal and discal black spots of *R. antiqualis* almost or wholly obliterated; no irregular submarginal white line as in that species, but the external border faintly dusted with ashy-white scales; marginal line brown, scarcely discernible: in other respects the two species are almost identical. Expanse of wings 25–26 millim.

Taru, 27th & 29th November, 1st December, 1896.

174. NODARIA EXTERNALIS.

Nodaria externalis, Guenée, Delt. et Pyral. p. 64 (1854).

♀, between Voi and Ndi, 16th May, 1897.

175. SIMPLICIA INFLEXALIS.

Simplicia inflexalis, Guenée, Delt. et Pyral. p. 52 (1854).

Samburu, 31st October, 1896; between Voi and Ndi, 19th May, 1897.

New to us from East Africa.

One other Noctuid was obtained at Taru on December 1st, 1896, but it is headless and rubbed, so that its identification is impossible.

LYMANTRIIDÆ.

176. REDOA CROCIPES.

Cypra crocipes, Boisduval, Faune Ent. de Madag. p. 87, pl. 12. fig. 2.

♀, Maungu Inkubwa, 21st March, 1897.

The female is quite new to us; unfortunately only one example was obtained.

177. CROPERA TESTACEA.

Cropera testacea, Walker, Cat. Lep. Het. iv. p. 826 (1855).

♀ ♀, Mgana, 18th & 30th June, 1896; Voi, 7th May, 1897.

New to us from East Africa.

178. OGOA SIMPLEX.

Ogoa simplex, Walker, Cat. Lep. Het. vii. p. 1764 (1856).

♀, Taru, 19th December, 1896.

The type (the only other example which I have seen) is from Natal; this is therefore a welcome addition to the Museum collection.

179. LACIPA IMPUNCTA, sp. n. (Plate XXXII. fig. 6.)

Allied to *L. gracilis*: silvery white; primaries of the male with a pale buff spot and black dot near base of costa, and angular series of orange spots before the middle, of which the four lower ones are conspicuous, and a slightly sigmoidal (*geschwungen* [1]) oblique series of seven spots across the disc; head, collar, and pterygodes pale buff; antennal pectinations testaceous; abdomen golden buff. Expanse of wings 23 millim.

The female, which I formerly supposed to be a variety of *L. gracilis*, was obtained in the Sabaki Valley by Dr. Gregory: it has no basi-costal spots on the primaries; the inner series of orange spots is reduced to two, and the outer series to six, all small; the body is white, with blackish anal tuft. Expanse of wings 35 millim.

♂, Mgana, 31st August, 1896.

The absence of all the black spots characteristic of *L. gracilis*, the nearer approach of the discal series of orange spots to the outer margin, the shorter fringe, and the deeper colouring of the male abdomen, readily distinguish this species from Hopffer's *L. gracilis.*

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[1] We have no English equivalent for this word, which exactly expresses the barely perceptible S-character of a line; 'sinuous' might mean more than S-shaped.

180. LOPERA MONOSTICTA, sp. n. (Plate XXXII. fig. 7.)

Nearest to *L. pallida*, Kirby, but the primaries creamy white, with a single small orange spot at the end of the cell; secondaries sericeous, snow-white; head ochreous; antennæ white, with testaceous pectinations; front of thorax, including the collar and anterior two-thirds of pterygodes, creamy white, remainder of body snow-white; under surface white; the basal half of costal margin of primaries buff; the collar below and the anterior coxæ ochreous. Expanse of wings 27 millim.

♂, Taru, 19th December, 1896.

181. ILEMA ROBUSTA?

Acyphas robusta, Walker, Cat. Lep. Het. iv. p. 799 (1855).

♂, Taru, 23rd November, 1896.

A fragment, much rubbed, apparently referable to this species.

ACLONOPHLEBIA, gen. nov.

Near to *Euproctis*, but totally dissimilar in aspect, altogether far less woolly; the head much more prominent, the palpi short, but very broadly fringed; pectinations of antennæ much coarser; legs much less hairy, the hind tibiæ with only the terminal pair of spurs, which are much more conical; the neuration very similar, but the subcostal veins of the secondaries (veins 6 and 7) not emitted from a footstalk, but near together from the anterior angle of the cell. Type *A. flavinotata.*

182. ACLONOPHLEBIA FLAVINOTATA, sp. n. (Plate XXXII. fig. 8.)

♀. Primaries above lilacine grey clouded with brown; a regular biangulated dark brown line across the middle of the wing, bordered broadly inside with whitish and outside with brownish; costal and interno-basal borders brownish; sometimes a black spot in the cell; a large diffused chrome-yellow patch beyond the lower angle of the cell, and a line of the same colour edging the central angulated line between its alternate angles; fringe pale stramineous indistinctly spotted with brownish: secondaries pale stramineous. Thorax grey; head, collar, and patagia clothed with testaceous hairs; antennæ grey, with darker pectinations; abdomen fulvous. Under surface stramineous, costal borders of wings ochraceous; primaries with a greyish spot at end of cell, indicating part of the central band of the upper surface; tarsi with greyish bands. Expanse of wings 27–32 millim.

Marago ya Fundi, 1st March; between Voi and Ndi, 2nd June, 1897.

Unfortunately only two examples, varying in size and also differing somewhat in pattern, were obtained.

HYPSIDÆ.

183. EGYBOLIA VAILLANTINA.

Phalæna vaillantina, Stoll, Suppl. Cramer, Pap. Exot. v. p. 142, pl. xxxi. fig. 3.

Mgana, 30th August, 1896; Mombasa, 4th January, 1897.

It is not at all certain that this is a true Hypsid.

184. SOMMERIA CULTA.

Sommeria culta, Hübner, Exot. Schmett. Zutr. figs. 433, 434 (1818).

♂ ♀, Samburu, 1st & 5th November, 1896.

This is an interesting variety in which the normal white markings on the primaries are suffused with the ground-colour, giving them a very uniform character. That this is mere variation and has no specific value is evident from the fact that we have an example in the Museum in which the left primary is similarly suffused, whilst on the right primary many of the white markings are present.

SATURNIIDÆ.

185. USTA WALLENGRENII.

Saturnia wallengrenii, Felder, Wien. ent. Monatschr. iii. p. 323, pl. vi. fig. 2.

♀, Maungu Inkubwa, 29th March, 1897.

This is the only fairly perfect example I have ever seen—the species having hitherto only reached us from Dr. Gregory's collection, and so much rubbed and shattered as to be barely recognizable. Unless Felder had a very closely allied species, his figure is incorrect (probably made up from an injured specimen, as the outer black edging to the central belt of the primaries is deeply and conically incised between veins 2 and 3).

186. BUNÆA (THYELLA) ZAMBESIA.

Thyella zambesia, Felder, Reise der Nov., Lep. ii. pl. lxxxv. fig. 5 (1874).

♂, Taru, 30th March, 1897.

The larva of this moth (which is quite new to the Museum Collection) is said by Mr. Betton to have been common at Taru on December 10th; the present example pupated on December 17th, 1896, and emerged at the end of the following March. The larvæ and pupa, which Mr. Betton preserved, were unfortunately not sent to us with his collection; he refers to the former as "bottle of larvæ marked Taru, Nov. 23 to Dec. 15, 1896," and to the latter—"see matchbox marked 'M.'"

If Mr. Betton could breed a series of this Saturniid, I think it would be conclusively proved that *B. barcas* Maassen was only a variation; it certainly is extremely closely related, if distinct, and the fact that both occur at Zanzibar is very suspicious.

187. HENUCHA HANSALII?

Ludia hansalii, Felder, Reise der Nov., Lep. ii. pl. lxxxix. fig. 1 (1874).

♀, Voi, 22nd April, 1897.

Felder's figure is either extremely bad, or this is a new species; it is very probable that the former is the correct explanation of the differences which exist between the two, and that the illustration was taken from a frayed and faded male. The species is quite new to the Museum, though nearly allied to the southern *H. delegorguei*, from which it differs chiefly in the trisinuated inner margin of the central belt of the primaries, its regularly undulated outer edging, the white margin of which is emphasized by a grey-mottled series of very indistinct markings across the disc. The female has the outer margins of the wings even more distinctly dentated than in that sex of *H. delegorguei*, but it is probable that this may not be the case in the male.

188. GOODIA HOLLANDI, sp. n. (Plate XXXIII. fig. 1.)

Allied to *G. nubilata*, but considerably smaller and paler: the male pale buff: the primaries clouded with fawn towards base of costa, the discoidal cell and centre of costa whitish, slightly mottled with lilacine grey (but most distinctly on costa); an ill-defined, irregular, transverse, dusky line across basal fourth, beyond which the inner border is partly white, flecked and edged with black almost to external angle; an oblique, ill-defined, subangulated, brown median band, just crossing the posterior angle of the discoidal cell and almost merging with a very broad golden-brown apical area crossed by an oblique slender dentate-sinuate black line, edged externally with whitish buff; costal border towards apex rose-tinted; the centre of external area occupied by a diffused lilacine greyish nebula, which commences in a dark grey cuneiform patch on outer margin towards apex; a curved blackish line on lower discocellular followed above the base of vein 4 by a buff-whitish spot: secondaries somewhat tawny within and below discoidal cell; a dusky line on discocellulars; an arched dentate-sinuate dusky line, blackish near inner margin, crossing the disc parallel to outer margin; costal and external areas pearly, tinted with pale rose and grey; inner or abdominal margin mottled with whitish and black. Head purplish brown, collar white, ochreous at sides, and brown-edged; thorax and base of abdomen pale buff; remainder of abdomen ruddy brown, excepting the anal tuft which is ochraceous; antennæ dark brown, with double divergent bipectinations fringed with buff-whitish pile. Under surface differing a good deal in detail from the upper surface, brown mottled and heavily clouded with lilacine greyish on basal half; body rosy brownish-purplish in front. Expanse of wings 58 millim.

♀. Smaller and altogether more ash-coloured than the male; the primaries less falcate, the secondaries narrower, less produced at anal angle, most of the markings obliterated, but the cell of the primaries ashy whitish as well as the area below it. Expanse of wings 53 millim.

♂, Voi, 18th April, 1897; ♀, Yaru, from larva obtained 12th December, 1896, pupated 20th December, emerged 4th May, 1897.

The species is also related to *Lasioptila ansorgei* Kirby (=*Saturnia kuntzei* Dewitz), which must be referred to Dr. Holland's genus *Goodia*. Kirby's *L. pomona* is not congeneric with the latter; therefore if his generic name is retained it must take *L. pomona* as type, instead of *L. ansorgei*.

I have named this pretty little species after the learned author of the genus, to whom all students of African Lepidoptera owe a debt of gratitude for his admirable work.

EUPTEROTIDÆ.

TROTONOTUS, gen. nov.

Allied to *Gangarides*, but with the form and aspect of *Eutricha* (*Lasiocampidæ*): the primaries not falcate, the radial of the secondaries (vein 5) wanting, only indicated by a fold, which disappears when damped with benzine; the angles of the cell also almost parallel; veins 6 and 7 not stalked as in *Gangarides*; the neuration of the primaries is practically the same in the two genera; the palpi are narrower, less densely fringed, the antennæ bipectinated almost to the tips; the abdomen much shorter and conical rather than truncated at the anal extremity, with expansive lateral tufts; the legs very hairy; middle and hind tibiæ with strong pointed terminal spurs, the hind tibiæ also with a second subterminal pair of spurs. Type *T. bettoni*.

189. TROTONOTUS BETTONI, sp. n. (Plate XXXIII. fig. 2.)

♂. Primaries above coffee-brown, faintly glossed here and there with glaucous; a rose-and-white tufted ochre-yellow spot below base of cell; an irregularly undulated, partly interrupted, internally blackish-edged yellow ʒ-shaped band across the basal third, also a few scattered yellow spots near its inner edge; a small deep ochreous reniform stigma; a broad internally angulated and undulated, externally irregular and sinuated discal yellow belt, traversed by four parallel dentate-sinuate stripes of the ground-colour and bordered outside by a blackish stripe; an oblique increasing slaty-blackish streak from apex, continuous with four transverse patches of the same colour parallel to outer margin; fringe darker than the rest of the ground-colour and tipped with blackish: secondaries pale ruddy-chestnut, shading into bone-yellowish on basi-costal area; fringe tipped with snow-white. Thorax greyish chocolate, with the top of the head, two large subconfluent spots on the middle of the collar, and the dorsal portion of the thorax between the patagia bright brick-red; antennæ pale buff, with white basal tuft and golden-brown pectinations; abdomen pale ruddy chestnut, more golden towards the base, and with pure white lateral and anal tufts. Under surface white; the wings slightly yellowish on costal area; the apical and external areas of all the wings minutely dusted with coffee-colour; the secondaries, excepting along abdominal border, purer white than the primaries; pectus buffish at the sides, the anterior legs bright coffee-coloured in front, the second pair slightly stained and the third pair irrorated with the same colour; venter more densely and finely irrorated. Expanse of wings 49 millim.

Mgana, 28th August, 1896.

It is unfortunate that Mr. Betton was only able to secure one male of this strikingly beautiful new form; the specimen, however, is in good condition and will be a most welcome addition to the Museum collection.

190. SABALIA PICARINA.

Sabalia picarina, Walker, Cat. Lep. Het. xxxii. p. 548 (1865).

Samburu, 13th November, 1896.

Unfortunately only one somewhat broken example was obtained; it is a species badly represented in the Museum collection, of which we should be glad to obtain good specimens.

SPHINGIDÆ.

191. LOPHOSTETHUS DEMOLINII.

Sphinx demolinii, Angas, Kaffirs Illustrated, pl. xxx. fig. 11 (1849).

♂, Taru, 29th November, 1896; ♀, Voi, 17th April, 1897.

192. POLYPTYCHUS GRAYII.

Smerinthus grayii, Walker, Cat. Lep. Het. viii. p. 249 (1856).

♀, Voi, pupa 6th May, emerged 12th May; ♀, Mbuyuni, 30th May, 1897.

We previously only possessed the male of this species, from Natal.

193. DIODOSIDA ROSEIPENNIS.

Diodosida roseipennis, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. x. p. 433 (1882).

♂ ♂, Maungu Inkubwa, 31st March; Voi, 7th May, 1897.

The male is new to the Museum, the type being a female from Delagoa Bay.

194. PROTOPARCE CONVOLVULI.

Sphinx convolvuli, Linnæus, Syst. Nat. 1, ii. p. 789 (1766).

Voi, 7th May, 1897.

195. AELLOPUS HIRUNDO.

Macroglossa hirundo, Gerstaecker, Arch. Nat. xxxvii. p. 360

(1871); Von der Decken's Reisen in Ost-Africa, Gliederthiere, p. 375, pl. xv. fig. 7 (1873).

Maungu Inkubwa, 21st March, 1897.

NOTODONTIDÆ.

196. ANTHEUA SIMPLEX.

Antheua simplex, Walker, Cat. Lep. Het. iii. p. 687 (1855).

♀, Taru, 23rd November, 1896.

The female is quite new to us and is of considerable interest, as it clearly indicates that *A. cinerea* Walk. is the female of *A. spurcata* of the same author.

197. STAUROPUS DASYCHIROIDES, sp. n. (Plate XXXII. fig. 12.)

♀. Primaries pale lilacine ash-grey, orbicular and reniform spots buffish white, ill-defined; a vague oblique dusky stripe from costa just behind the orbicular spot, uniting below first median branch with an ill-defined, pale-buff-bordered, undulated, arched postmedian dusky line; beyond the latter three almost parallel diffused stripes, which form an imperfect widely zigzag inner limitation to a slightly paler external border; costa crossed beyond the middle by three or four short dusky bars: secondaries semitransparent white, with sordid costal border and moderately broad smoky-brown outer border; fringe ashy white: antennæ rosy cupreous, with ferruginous pectinations; thorax coloured like the primaries, the patagia slightly brownish; abdomen pale brownish ash. Primaries below pale lilacine ash-coloured, with vague whitish orbicular and reniform spots, between which runs a grey oblique streak from the costa; a faint trace of a postmedian stripe commencing in an oblique blackish costal dash, three blackish subapical costal spots, below which a broad smoky submarginal belt commences and runs to external angle; outer border pale lilacine ash-grey; interno-basal area white: secondaries as above: pectus ashy; legs somewhat fuliginous; venter sordid white. Expanse of wings 53 millim.

Maziwa Mitatu, 27th March, 1897.

This curious species has the neuration of *Stauropus*, but does not nearly resemble any form know to me.

GEOMETRIDÆ.

198. GONODELA SUFFLATA.

Macaria sufflata, Guenée, Phal. ii. p. 88, pl. xvii. fig. 8.

Between Voi and Ndi, 3rd & 4th June, 1897.

New to the Museum from East Africa, though we have it from the extreme south and from Abyssinia.

199. CŒNINA AURIVENA, sp. n.

Cœnina flavivena Warren, MS.

♀. Primaries formed as in *C. pœcilaria*, pale greyish stonebrown; the discoidal cell and a streak beyond it as well as the internal area mottled with cream-whitish, and the whole surface irrorated with blackish dots; a dusky almost falciform postmedian stripe; external angle mottled along inner margin with ferruginous; fringe white, varied with greyish brown at base: secondaries with deeply but widely inarched costa; outer margin produced into an acute point at extremity of first subcostal branch and very slightly sinuated between the apex and this point; remainder of outer margin slightly inarched, and very slightly sinuated to the so-called 'third median branch,' otherwise very regular; costal half coloured like the primaries, internal half almost to submedian vein suffused with coffee-brown, ferruginous at anal angle; a triangular yellow patch edged and intersected by ferruginous lines at base of median veins, and a short tapering white bar (in continuation of the yellow patch) across the end of the cell; abdominal area creamy white varying to silvery white; fringe white; the surface of the wing irrorated with blackish dots like that of the primaries. Head and palpi orange; antennæ cream-white; remainder of body above coloured like the primaries. Under surface of wings paler than above, mottled with deeper grey and speckled with black; the primaries with a longitudinal streak beyond the cell, a spot at base of median interspace and the interno-basal three-fifths creamy white grey-mottled; a subapical diffused patch, a patch below the centre of the disc, a very irregular patch at external angle, and a portion of the veins from the median backwards orange-tawny: secondaries with the abdominal half white, the costal half blotched and veined with orange-tawny; a white bar beyond the discoidal cell as above; outer margin grey varied with orange-tawny; fringe white: body below pale greyish brown, almost white on venter; legs varied with ferruginous. Expanse of wings 34 to 37 millim.

Samburu, 3rd November, 1896; Mbuyuni, 29th May, 1897.

We have males in the Museum from Ambriz and Accra; they show a tawny or brown-edged spot at the base of the median branches of the primaries above, more distinctly than in the female (where it only appears like an excrescence of the discoidal streak); the median vein and base of the submedian vein in the example from Ambriz are also yellowish (which doubtless suggested Warren's unsatisfactory name for the species). The darker portion of the secondaries in specimens from Accra is also darker in both sexes than in the male from Angola, but this is doubtless a variable character; the pectinations of the antennæ in male examples are pale orange.

The veins on the under surface of the primaries being partly orange-tawny, I have modified the manuscript name proposed by Warren.

200. A Boarmian form too much injured for identification, being not only faded and broken but a female.

Voi, 16th April, 1897.

HAMEOPIS, gen. nov.

Apparently nearer to *Zamacra* than to any other Geometrid genus, though differing entirely in neuration, in body clothing, in character of legs and palpi. Wings broader. shorter, and utterly dissimilar in character: primaries with veins 8 and 9 out of 7, stalked; 10 and 11 closely approximated, stalked at base: secondaries with all the veins separate excepting 7 and 8, which coalesce close to base, separating again before middle of cell; veins 3 and 7 both emitted from cell before the terminal angles. Antennæ with long straggling pectinations (as in *Zamacra*) to about four-fifths of the distance from their base, terminal fifth serrated; palpi small, porrected, smooth; thorax coarsely scaled, but not hairy; frontal process prominent, subquadrate, with bare Λ-shaped ridge running between the antennæ to back of head and deep facial depression; legs smooth; hind tibiæ with median spurs emitted close behind the terminal pair. Type *H. rudicornis.*

201. HAMEOPIS RUDICORNIS, sp. n. (Plate XXXII. fig. 13.)

Wings above sericeous white; primaries irregularly speckled all over with grey and blackish, a mottled subbasal band angulated at median vein, a reversed oblique costal spot just beyond middle, an oblique discal band forked on costa, and a partial outer border of the same colours, the blackish parts being costal: secondaries with a few scattered dark grey dots chiefly on the veins, indicating a discal transverse line; an apical patch and some scattered clusters of dots representing an external border. Head and thorax white, the horny shovel-shaped process and forked dorsal ridge on the head deep chestnut; shaft of antennæ dark smoke-grey, white barred with dark grey at base, pectinations pale brownish grey; thorax white, patagia alternately spotted and transversely barred with black, metathorax similarly marked; abdomen golden testaceous, whitish at the sides and at anal extremity, with dorsal dusky spots. Under surface white: wings paler in markings but otherwise as above; tibiæ banded in front with grey, tarsi black above. Expanse of wings 42 millim.

♂, Taru, 1st December, 1896.

202. HÆMATORITHRA RUBRIFASCIATA.

♂. *Hæmatorithra rubrifasciata*, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. xviii. p. 162 (1896).

♀, Mgana, 4th August, 1896.

This is the first female I have seen of *H. rubrifasciata*; the species would seem to be rare, Mr. Crawshay having only obtained two males during his sojourn in Nyasaland.

203. PROBLEPSIS VESTALIS.

Argyris vestalis, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xvi. p. 419 (1875).

Taru, 19th December, 1896.

LASIOCAMPIDÆ.

204. HETEROPACHA sp.

A single female practically agreeing in structure and general appearance with the Texan *H. rileyana*, but too much worn for the pattern to be critically compared.

♀, between Voi and Ndi, 2nd June, 1897.

The specimen is an interesting addition, in spite of its poor condition, on account of its evident close affinity to a New World species.

205. CHILENA PROMPTA.

Lasiocampa prompta, Walker, Cat. Lep. Het. vi. p. 1437 (1855).

Voi, 22nd & 29th April, 1897.

New to the Museum from Eastern Africa.

206. CHILENA DONALDSONI.

Chilena donaldsoni, Holland, Through Unknown African Countries, pp. 413 & 420, fig. 8 (1897).

Samburu, 7th November; Taru, 29th November, 1896; Marago ya Fundi, 1st March; between Voi and Ndi, 18th May, 1897.

Fresh examples are darker coloured than the typical form (which was evidently somewhat faded); the silvery white marking on the primaries also sometimes is continued back completely to the base, though the basal half is less purely white than the permanent marking. *C. donaldsoni* is new to the Museum collection.

207. LEBEDA KÖLLIKERII.

Lasiocampa köllikerii, Dewitz, Verhandl. kais. Leop.-Carol. Deutsch. Akad. Naturf. vol. xlii. p. 78, pl. i. fig. 15 (1881).

♀, Maziwa Mitatu, 18th March, 1897.

The female is quite new to the Museum: structurally it perfectly agrees with *Lebeda nobilis*. A single male from Delagoa Bay was received in 1893, but is so much more yellow and altogether brighter in colour than the female that it was not recognized as Dewitz's species; it also differs in having the body above glistening golden buff, with a large black dorsal patch extending from the base to the anal segment.

LIMACODIDÆ.

208. SCOTINOCHROA INCONSEQUENS.

Scotinochroa inconsequens, Butler, P. Z. S. 1896, p. 845.

Maziwa Mitatu, 24th March, 1897.

A single worn and very dirty male specimen, which must, I think, be referable to this species, but differs in having a pale buff patch with reddish centre at external angle of primaries; otherwise it agrees in pattern with the type: it is interesting as a variety. *Scotinochroa* is very closely related to *Zinara*, Walk.

209. OMOCENA SYRTIS ?

♂. *Miresa syrtis*, Schaus & Clements, Coll. Sierra Leone Lep. p. 28, pl. ii. fig. 3 (1893).

♀, Voi, 19th September, 1897.

The lines across the primaries approximate on costa and diverge more widely on inner margin than in the figure of the male; but variations of this nature are so common, that I dare not venture to assume their importance in the present instance.

210. GAVARA VELUTINA.

♂. *Gavara velutina*, Walker, Cat. Lep. Het. xii. p. 771 (1857).

♀, Maungu Inkubwa, 20th March, 1897.

New to us from E. Africa. Walker placed it in the *Noctuidæ*, just in front of the *Acontiinæ*, to which (of course) it has no affinity.

211. NIPHADOLEPIS AURICINCTA, sp. n. (Plate XXXII. fig. 9.)

Sericeous snow-white; primaries with faint traces of buff (possibly the indications of a subbasal stripe) near the base: two buff central stripes, oblique and tolerably wide apart from costa to median vein, thence rather closer together and undulated to inner margin; a buff discocellular lunule joining the outer stripe; an abbreviated buff submarginal stripe towards external angle; three black marginal dots at apex and one near to external angle: secondaries with narrow diffused dusky border: collar and patagia stained with buff: abdomen with bright golden-orange hind margins to the segments. Under surface sericeous snow-white, the primaries with sordid buffish suffusion on costal half; all the wings with two blackish marginal dots at apex; anterior legs banded with olive-brown. Expanse of wings 24 millim.

Taru, 29th November, 1896.

Niphadolepis approaches *Gavara* in structure, the antennæ and palpi being similar and the venation not very greatly differing.

212. PARYPHANTA BISECTA, sp. n. (Plate XXXII. fig. 10.)

Nearly allied to *P. fimbriata*: smoky grey, the primaries considerably darker than the secondaries and divided through the middle by a narrow oblique faintly angulated belt, white internally, flesh-tinted externally; a pale submarginal line: fringe with a buffish basal line and pale tips: secondaries bone-whitish towards base: fringe paler than in primaries, but similarly coloured: head pale buffish, antennæ and palpi pale golden ochreous: thorax whity brown, with dusky central transverse belt and posterior margin: abdomen golden-testaceous, with sericeous ashy dorsal transverse bars: under surface pale sandy brownish: primaries sericeous greyish shading to bronze-brown. Expanse of wings 17 millim.

♂, Samburu, 14th November, 1896.

Karsch describes his species as having the primaries grey, densely covered with brown dots; if examined under a platyscopic lens, my species might be described as pale grey densely covered with blackish dots.

LEMBOPTERIS, gen. nov.

In outline approaching *Tortricidia*, but in coloration and structure perhaps nearer to *Niphadolepis*; the antennæ and palpi smooth, the former submoniliform and feebly setulose from before the middle to the distal extremities; hind tibiæ with very long spurs: primaries with the costal margin long, slightly arched; outer margin very oblique, forming a regular curve with the inner margin which is much arched; veins 7, 8, and 9 stalked: secondaries ovate; veins 3 and 4 from same point; discocellulars deeply inangled; veins 6 and 7 with a short footstalk. Type *L. puella*.

213. LEMBOPTERIS PUELLA, sp. n. (Plate XXXII. fig. 11.)

Primaries above sericeous snow-white; costal margin narrowly ochreous; two black dots at apex and two on the disc, of which one is below vein 2 and the other (which is not always present) below vein 6: secondaries pale golden stramineous, sericeous, with one dusky marginal dot near apex; fringe white-tipped: head and thorax snow-white; antennæ and palpi golden stramineous; abdomen stramineous, becoming white at base and with olivaceous transverse dorsal bars. Primaries below stramineous, finely dusted with greyish; fringe white; two blackish apical dots: secondaries sericeous white, almost silvery, costa washed with stramineous; extreme margin indicated by an extremely slender dusky line; a black subapical dot: body below silvery white, the anterior legs and the tarsi and spurs of the remaining legs golden stramineous; venter slightly tinted with this colour. Expanse of wings 21 millim.

Samburu, 7th November, 1896.

Two somewhat imperfect examples were obtained; apart from the outline of the primaries, the long slender legs and the great length of the median and terminal spurs on the hind pair are very characteristic.

ARBELIDÆ.

214. ARBELA ALBONOTATA, sp. n.

♂. Primaries above ash-grey, varying to whity brown at base, on costa, at external angle, and more or less on inner margin, and with two longitudinal diffused streaks of buffish and chestnut, one short beyond the cell, the other long below the median vein; veins and numerous black-edged transverse striæ sordid white; six pure white spots, one fairly large at end of cell, one small beyond it near outer margin; the other four are within the interno-median area, each placed upon a transverse stria, the first two small, the last two large and forming a triangle with the spot first mentioned: secondaries sericeous white, veins and margins brownish: antennæ castaneous, the shaft covered with glistening silvery scales; thorax buffish, the borders of all the divisions washed with chestnut and edged with blue-black scales; abdomen clothed with long glistening white hair, the anal extremity with brown-tipped spatulate hair-scales; a large dorsal tuft tipped with blue-black near the base; remaining segments with transverse blue-black bars. Under surface white; markings of upper surface indicated in smoky brownish; secondaries with indications of similar markings on costa and (more vaguely) beyond the middle: body stained in the middle with chestnut brownish; front of head brown; two anterior pairs of legs clothed with brown and blue-black tipped bristles; hind pair less varied in colouring. Expanse of wings 25 to 31 millim.

♂ ♂, Maungu Inkubwa, 2nd April; Mbuyuni Hill, 31st July and 3rd August, 1897.

The example first obtained is somewhat shattered and worn: it represents the greatest expanse of wing and is the palest specimen of the three.

At first I imagined that this species might be the male of Karsch's *Pettigramma spiculata*; but a careful study of his description has satisfied me that his insect is the female of Walker's *Salagena transversa*, from Sierra Leone. *Salagena* differs chiefly from *Arbela* in the upright hair on the anal segment instead of spatulate hair-scales.

ZYGÆNIDÆ.

215. ARNIOCERA CHRYSOSTICTA, sp. n. (Plate XXXIII. fig. 3.)

Allied to *A. auriguttata* (*A. melanopyga* Wallgr.). Wings black, shot with blue; primaries with purplish blue almost to outer margin, where it shades into bright Prussian blue; costa densely irrorated with metallic emerald-green; five golden-ochreous spots as follows—one small, across the cell near its extremity, a larger oval one beyond the cell, one smaller (rounded) between veins 2 and 3, one large at centre of interno-median interspace, and one equally large, subtriangular, very metallic, crossed by vein 1 towards the base: secondaries shot with Antwerp blue, purplish on the fringe. Body black; vertex of head and palpi carmine-red; antennæ shining black; thorax slightly sprinkled with metallic green scales; patagia brilliantly brassy green: metathorax and base of abdomen greenish steel-blue; two terminal segments of abdomen ultramarine-blue, with black anal tuft. Wings below more brightly shot with blue than above, but the submedian golden-ochreous spots partially obliterated; the three others nearly as above. Body below black, the venter brilliantly glossed with steel-blue: anterior legs black externally, but clothed internally with short bright ochreous hair; femora of second pair purplish black, ochreous in front; the tibiæ orange-vermilion externally, clothed internally with long carmine hair; tarsi black; posterior femora purplish black; tibiæ vermilion-red, tipped with blue-black and with a long pencil of creamy-white hair extending to the basal third of the black tarsi. Expanse of wings 26 millim.

Samburu, 4th November, 1896.

Unfortunately only one slightly damaged example of this beautiful species was obtained [1].

216. Arniocera cyanoxantha. (Plate XXXIII. fig. 5.)

♀. *Zygæna cyanoxantha*, Mabille, Ann. Soc. Ent. Belg. 1893, p. 57; Mabille and Vuillot, Novit. Lep. fasc. xii. p. 151, pl. xxi. fig. 6.

Samburu, 10th November, 1896.

One typical male differs from Mabille's figure in the loss of the orange spot below the subapical one; the other examples have all the spots brilliant crimson instead of orange: the name for the species is therefore not very characteristic. The specimens are not in specially good condition, so I hope Mr. Betton will obtain others.

217. Arniocera imperialis, sp. n. (Plate XXXIII. fig. 6.)

♂. Primaries above shining Prussian green, changing to blue at outer margin, five black-edged carmine spots (the two central ones sometimes confluent, forming a transverse band) as in *A. cyanoxantha*, fringe purple flecked with copper: secondaries with the basi-costal half bright rose-colour, tinged with orange at base; outer half bright Antwerp blue, changing to purple on the fringe; an ill-defined subapical cluster of rosy scales: thorax glittering steely green, yellowish on centre of dorsum; sides of face purple; palpi carmine; sides of collar and inner border of patagia crimson; metathorax with sides and hind margin orange; abdomen orange-vermilion, tinted with carmine at the sides, basal segment greenish black. Primaries below bright blue, spots as above, but more vermilion; base of cell varied with golden testaceous: secondaries rose-red, with a basi-costal dash and a longitudinal costal streak blue; a squamose blackish streak from end of cell to extremity of vein 1; fringe greyish coppery at apex: body below blue-black; anterior coxæ orange-vermilion; a golden line along inner edge of tibiæ; middle tibiæ carmine with black tips; posterior tibiæ with long cream-whitish pencil of hairs. Expanse of wings 32 millim.

Samburu, 10th November, 1896.

Two tolerably good examples of this lovely moth were obtained.

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[1] The following beautiful new species was presented to the Museum by Dr. Edward A. Heath:—

Arniocera ericata, sp. n. (Plate XXXIII. fig. 4.)

Primaries glossy greenish black; a broad irregular subbasal belt, a bilobed oblique postmedian abbreviated band, and a large ovate oblique subapical patch scarlet: secondaries with ochreous costal area, otherwise the basal half vermilion, with an irregular submedian basal blue-black patch; external half blue-black, throwing a long inner process up vein 1, enclosing a large scarlet subapical spot, and slightly sprinkled with scarlet along outer margin: thorax greenish black; abdomen scarlet, transversely banded with indigo-blackish; antennæ and palpi black; anterior legs greenish black; tibiæ slightly testaceous internally, tarsi with reddish short bristles; middle legs with the femora greenish black, slightly chestnut below (possibly owing to abrasion); tibiæ clothed with scarlet hair, with tip and spurs black; tarsi brown; hind legs a good deal rubbed, but apparently similar to the middle pair: wings below nearly as above, but the primaries broadly orange at the base. Expanse of wings 34 millim.

British East Africa (*Heath*).

218. ARNIOCERA STERNECKI. (Plate XXXIII. fig. 7.)

Arichalca sternecki, Rogenhofer in Baumann's Usambara u. s. Nachbargebiete, p. 331 (1891).

Maungu Inkubwa, 21st March, 1897.

Rogenhofer describes his insect as having the abdomen and secondaries yellow; in Mr. Betton's specimens they are carmine. Either the type was a faded specimen or one of those orange-yellow variations common among the crimson-winged *Zygænidæ*. The species is quite new to us.

PYRALIDÆ.

219. ANCYLOLOMIA CHRYSOGRAPHELLUS.

Crambus chrysographellus, Kollar in Hügel's Kaschmir, p. 494.

Taru, 27th November, 1896.

220. BRIHASPA CHRYSOSTOMUS.

Schœnobius chrysostomus, Zeller, Micr. Caffr. p. 68.

Mgana, 1st & 9th August, 1896.

New to the collection from East Africa.

221. PATISSA sp.

Close to *P. fulvosparsa*, but without the ochreous markings; it has lost both labial palpi and fringes, and may even be a very worn example of the Asiatic species: therefore I hesitate about giving it a name.

Samburu, 4th November, 1896.

222. MACALLA sp.

Maungu Inkubwa, 3rd April, 1897.

One shattered female was obtained, but, even if perfect, it would not be satisfactory to describe it without seeing the male, the antennal characters of that sex often differing in species of the same genus.

223. LEPIDOGMA sp.

Taru, 24th November, 1896.

One slightly damaged female; it was enclosed in the same envelope with a much worn and quite unrecognizable Noctuid (apparently a *Metachrostis*). It is of no use to describe this species without its male; it and the preceding are both new to the Museum series, and will probably be of service when the other sex comes to hand.

224. ZITHA VARIANS, sp. n. (Plate XXXIII. figs. 8, 9.)

Primaries vinaceous grey-brown or bright chestnut, with or without marginal dusky dots; a broad central belt, either more dusky or scarcely differing in tint from the ground-colour, but margined on both sides by more or less dentate-sinuate whitish stripes diverging on costal margin; the inner stripe more or less strongly inangulated below median vein, the outer stripe zigzag;

a whitish spot below base of cell; a series of white costal points between the two transverse stripes; a more or less prominent blackish reniform stigma; a whitish line at the base of the fringe: secondaries paler than primaries, crossed beyond the middle by a dusky bordered whitish line parallel to outer margin; a whitish line at base of fringe: body darker than ground-colour of wings. Under surface of wings paler and more uniform than above, reddish on costal and outer borders, whitish on internal area; a dusky median shade bounded by the outer whitish stripe of the primaries and the postmedian whitish stripe of the secondaries; inner whitish stripe of primaries obsolete; a blackish spot at the anterior angle of each discoidal cell; indistinct dusky marginal dots followed by the whitish line at base of fringe: body below somewhat darker and redder than the wings, the tibiæ and tarsi paler. Expanse of wings 23 to 25 millim.

Voi, 17th April; between Voi and Ndi, 4th June, 1897.

225. PYCNARMON CRIBRATA.

Phalæna cribrata, Fabricius, Ent. Syst. iii. 2, p. 215 (1794).

Mgana, 12th August, 1896.

New to us from East Africa; indeed, we previously only possessed one African example (from Sierra Leone).

226. LYGROPIA AMYNTUSALIS.

Botys amyntusalis, Walker, Cat. Lep. Het. xviii. p. 662 (1859).

Marago ya Fundi, 4th March, 1897.

The same observation applies to this as to the preceding species.

227. SYNGAMIA ABRUPTALIS.

Asopia? abruptalis, Walker, Cat. Lep. Het. xvii. p. 371 (1859).

Mgana, 5th August, 1896.

New to the Museum from Eastern Africa, though we have it from Accra.

228. GLYPHODES STENOCRASPIS, sp. n. (Plate XXXIII. fig. 10.)

Wings pearly semitransparent white; primaries with narrow gilded brown costal border, very narrow darker brown outer border excised below vein 8; fringe greyish brown, with slender white basal line; a small black spot at end of cell: secondaries with narrow dark brown border not reaching anal angle, fringe as in primaries: body snow-white, the patagia silvery, the collar slightly stained yellowish, front of forehead brownish testaceous; anal tuft black: wings below nearly as above, but the borders paler, costal border confined to the extreme margin and a stain towards apex. Expanse of wings 29 millim.

Mombasa, 4th January, 1897.

Nearest to the Western *G. elealis* Walk. (of which *Phakellura peridromella* Mab. is a synonym), but with the brown borders to the wings considerably narrower; the excision of the outer border at apex of primaries also allies this species to *G. albifuscalis* Hamps.

229. GLYPHODES SINUATA.

Phalæna sinuata, Fabricius, Ent. Syst. iii. 2, p. 208 (1793).
Voi, 1st May, 1897.

230. LEPYRODES GEOMETRALIS.

Lepyrodes geometralis, Guenée, Delt. et Pyral. p. 278.
British E. Africa (no exact locality or date on envelope).
New to the Museum from Eastern Africa; we have it from Accra.

231. LEPYRODES CAPENSIS.

Lepyrodes capensis, Walker, Cat. Lep. Het. xxxiv. p. 1344 (1865)
Mgana, 1st August, 1896.
New to us from Eastern Africa.

232. ZEBRONIA PHENICE.

Phalæna phenice, Cramer, Pap. Exot. iv. p. 185, pl. ccclxxxii. G (1782).
Mgana, 1st August, 1896; Mombasa, 4th January, 1897.
New to us from the Eastern coast; we have it from Uganda.

TINEIDÆ.

233. MICROCOSSUS BETTONI, sp. n.

Nearest to *M. mackwoodi*: sordid sericeous white; primaries transversely reticulated with brown lines, some of which are dotted with black scales; the reticulated lines are coarser on costal border, especially towards the base and the apex, and form the boundaries of slightly brownish quadrate spots, the best defined of these spots is placed on the costa just above the end of the cell; antennæ bronze-brown, sericeous, with dull testaceous pectinations in the male: under surface brownish; primaries with ill-defined darker brown patches. Expanse of wings 25 to 30 millim.

♂ ♀, Samburu, 31st October, 1896.

Only one pair of this obscure little moth was obtained, unfortunately not in perfect condition.

234. A Micro-Lepidopteron of doubtful genus.

Taru, 16th December, 1896; Voi, 2nd May, 1897.

A very beautiful little moth quite new to the Museum: the primaries blue-green and glistening, the secondaries sericeous purple; anterior half of body black, posterior half golden ochreous. Not having paid much attention to the *Tineidæ* I will not pretend to decide where this insect should be placed; it has antennæ which remind one of typical *Zygænidæ*, and, so far as I remember, are only approached by *Exodomorpha* or *Eretmocera*.

The following new genus, structurally, should be an Arctian, and must therefore be placed in the *Arctiidæ*, but it has much more nearly the aspect of a Noctuid of the *Plusia* group of genera; it reminds one a little of *Calesia* and (in style of coloration) of *Rhynchina*.

METACULASTA, gen. nov.

Primaries elongate, subtriangular; vein 2 remote from 3; 3, 4, and 5 separate but emitted near together; 6 from upper angle of cell, 7 from centre of postdiscoidal areole, 8 and 9 stalked, out of 10, which forms front of areole; 11 emitted well before end of cell: secondaries with costa slightly angular at centre; veins 2 to 6 as in primaries, 7 and 8 anastomosed to near end of cell: thorax broad, flattened above; head rather wide; antennæ smooth, palpi directed obliquely upwards; hind tibiæ with two pairs of spurs, inner spurs very long. Type *M. dives*.

235. METACULASTA DIVES, sp. n.

♀. Primaries above golden testaceous, longitudinally indistinctly streaked with greyish and flecked with blackish near the borders; a black dot at upper angle of cell; a very oblique shining silver streak towards the base, just entering the discoidal cell and not extending below vein 1; a second slightly-waved arched oblique streak commencing at about the basal third of inner margin (where it is indistinct) and extending to apex; a pale diffused flesh-tinted band runs above the latter, almost filling the interval between the two silver streaks on the lower half of the wing; fringe with a pale basal line: secondaries pearl-white, slightly buffish at costal and outer margins: thorax ash-greyish; abdomen whity brown, nearly white. Primaries below whity brown, showing traces of the upper surface markings through the wing: body below white; tarsi slightly brownish underneath. Expanse of wings 33 millim.

Voi, 11th July, 1897.

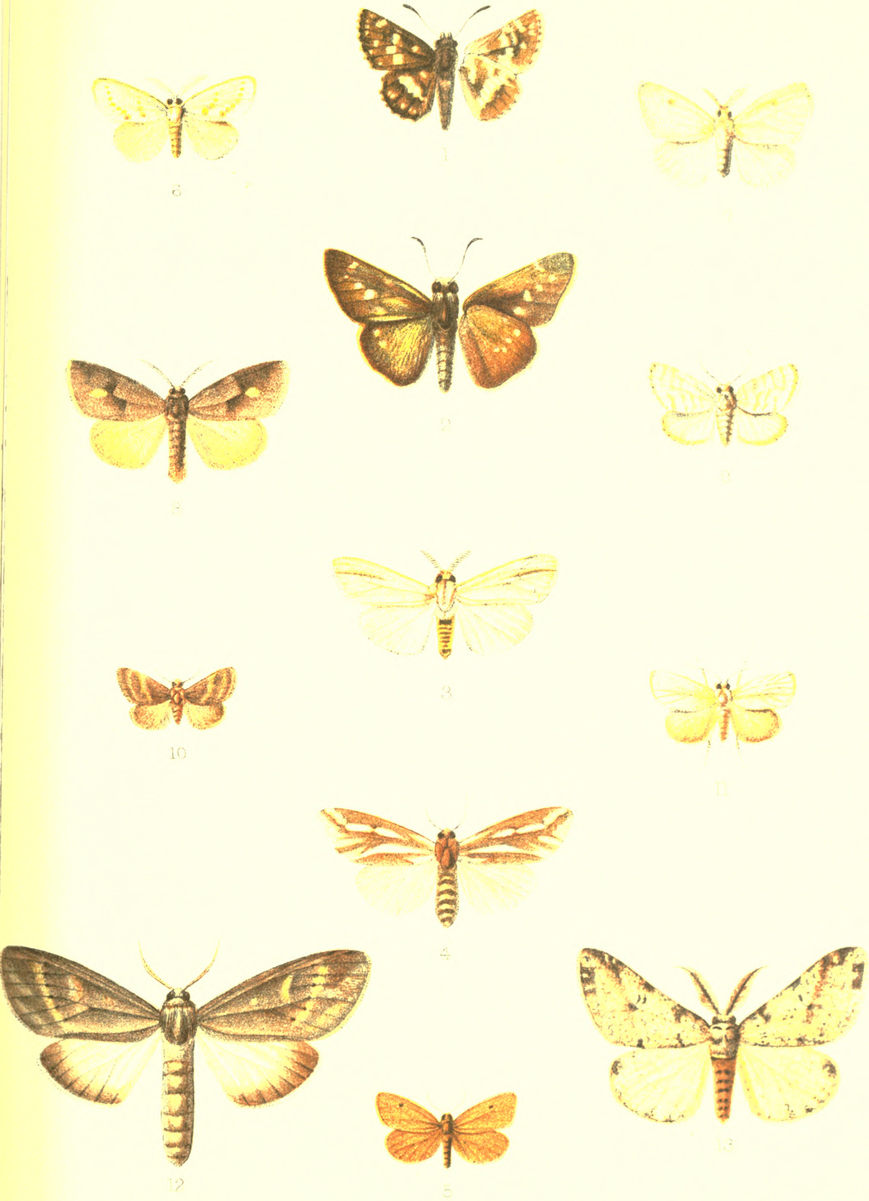
EXPLANATION OF THE PLATES.

PLATE XXXII.

Fig. 1. *Pyrgus bettoni*, p. 415.
2. *Baoris auritinctus*, p. 416.
3. *Aloa bivittata*, p. 417.
4. *Lacydes gracilis*, p. 417.
5. *Bettonia ferruginea*, p. 418.
6. *Lacipa impuncta*, p. 427.
7. *Lopera monosticta*, p. 428.
8. *Aclonophlebia flavinotata*, p. 428.
9. *Niphadolepis auricincta*, p. 437.
10. *Paryphanta bisecta*, p. 437.
11. *Lembopteris puella*, p. 438.
12. *Stauropus dasychiroides*, p. 433.
13. *Hameopis rudicornis*, p. 435.

PLATE XXXIII.

Fig. 1. *Goodia hollandi*, p. 430.
2. *Trotonotus bettoni*, p. 431.
3. *Arniocera chrysosticta*, p. 439.
4. „ *ericata*, p. 440.
5. „ *cyanoxantha*, var., p. 440.
6. „ *imperialis*, p. 440.
7. „ *sternecki*, var., p. 441.
8, 9. *Zitha varians*, p. 441.
10. *Glyphodes stenocraspis*, p. 442.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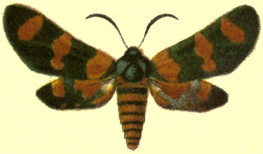
E. C. Knight ad nat. lith.

West, Newman chromo.

British – East – African Lepidoptera.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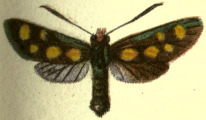
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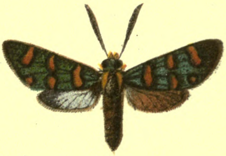
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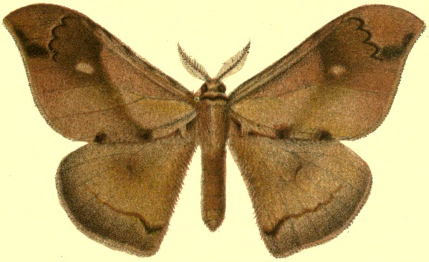
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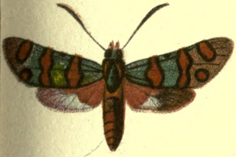
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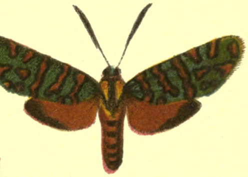
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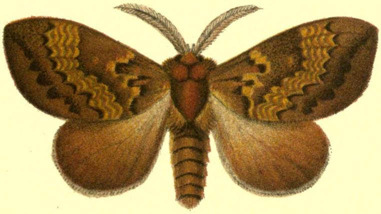
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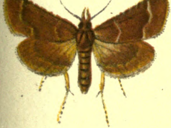
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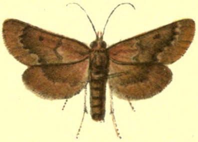
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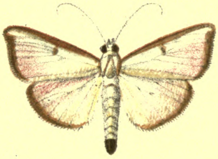
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E. C. Knight ad nat. lith.

West, Newman chromo.

British-East-African Lepidoptera.

July 1898

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 7, Vol. ii., *July* 1898.

On the Butterflies of the Genera Leptophobia *and* Pieris.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

IN spite of adverse criticism, I have seen no reason to change my decision either as to the distinctness of *Leptophobia* or as to what should be regarded as typical *Pieris*. Strictly speaking, perhaps, *Parnassius apollo* should be regarded as the type of *Pieris*, Schrank; Scudder, however, considers *Ganoris rapæ* to be the type, regarding the closely related *G. brassicæ* as generically distinct. I have clearly proved that the trivial characters upon which these two nearly allied "cabbage-butterflies" were separated are utterly unreliable, being inconstant in the extreme. If we were, on the other hand, to make *Parnassius apollo* the type of *Pieris*, it would not only create hopeless confusion, but would necessitate giving a fresh name to the subfamily Pierinæ, a course not to be desired by any who keep in view the sole object of nomenclature.

As before, therefore, I accept Boisduval's definition of *Pieris*, taking *P. amathonte* (=*P. demophile* ♀) as its type.

In the 'Biologia Centrali-Americana' the genus *Pieris* is expanded to include *Synchloe*, *Mylothris*, *Leptophobia*, and *Glutophrissa*; but personally I prefer to keep all groups having constant structural differences, whether of neuration or other details, as separate genera. As regards the statement that *P. protodice* (*Synchloe*) is sexually inconstant in neuration, I can only suggest that this state of things is individual and abnormal, inasmuch as nine out of our ten male examples show the apical furca in the primaries quite as clearly as in our six females. This, I do not for a moment doubt, the authors of the 'Biologia' will frankly admit when they have again investigated the point.

The following is a list of the species so far as they are known to me:—

LEPTOPHOBIA, Butler.

1. *Leptophobia eleone.*

Pieris eleone, Hewitson, in Gen. Diurn. Lep. pl. vi. fig. 6 (1847).
Pieris Smithii, Kirby, Trans. Ent. Soc. 1881, p. 357; Rhop. Exot. i. pl. i. figs. 3, 4 (1888).

Venezuela, Bogota, Bolivia, Quito, Ecuador. B. M.

P. Smithii is evidently a slight variation, differing only in the narrowness of the posterior portion of the outer border of the primaries; the width of this border varies a good deal in *L. eleone*.

2. *Leptophobia eleusis.*

Pieris eleusis, Lucas, Rev. et Mag. de Zool. 1852, p. 331.
Pieris suadella, Felder, Wien. ent. Monatschr. v. p. 79 (1861).

Venezuela. B. M.

I think it very doubtful whether the following is distinct from this.

3. *Leptophobia helena.*

Pieris helena, Lucas, Rev. et Mag. de Zool. 1852, p. 332.

Quito. B. M.

4. *Leptophobia aripa.*

Pieris aripa, Boisduval, Sp. Gén. Lép. i. p. 528 (1836).
Pieris balidia, Boisduval, *t. c.* p. 529.
Pieris elodia, Boisduval, *l. c.*

Rio Janeiro, Bolivia, Venezuela, Panama, Costa Rica, Guatemala, Mexico. B. M.

Our examples of *L. balidia* (from Rio Janeiro) have the under surface of the secondaries and apex of primaries more buff-coloured than Central-American examples; but the Bolivian example is somewhat intermediate.

5. *Leptophobia pinara.*

Pieris pinara, Felder, Reise der Nov., Lep. ii. p. 179 (1865).

Bogota, Bolivia, and Ecuador. B. M.

6. *Leptophobia erinna.*

Pieris erinna, Hopffer, Stett. ent. Zeit. 1874, p. 335.

Peru. B. M.

7. *Leptophobia nephthis.*

Pieris nephthis, Hopffer, Stett. ent. Zeit. 1874, p. 334.

Bolivia and Ecuador. Coll. Hewitson.
Nearly allied to the preceding species.

8. *Leptophobia stamnata.*

Pieris stamnata, Lucas, Rev. et Mag. de Zool. 1852, p. 330.
Pieris euthemia, Felder, Wien. ent. Monatschr. v. p. 80 (1861).

Venezuela. B. M.

9. *Leptophobia penthica.*

Leptalis? penthica, Kollar, Denkschr. Akad. Wiss. Wien, math.-nat. Cl. i. p. 360, pl. xlv. figs. 11, 12 (1850).

Bogota and Ecuador. B. M.

10. *Leptophobia subargentea*, sp. n.

♂. Above very similar to the same sex of *L. tenuicornis*, but the base of primaries blacker, the white markings more cream-coloured, the large patch barely extending above the second median branch (so as to leave a much wider interval between it and the subapical bifid spot); secondaries much less blue, the inner bordering of the much larger creamy white patch being rather silver-grey. Primaries below with costa and fringe sulphur-yellow, apical area silver crossed by black veins; white area rather more extended basally than above and pure white, subapical white spot slightly broader: secondaries silver, with black veins; basal lobe daffodil-yellow in front, saffron behind. Body normal.

Expanse of wings 58 millim.

Pucartambo, Peru (*Whitely*). Type B. M.

Evidently related to, but distinct from, the following.

11. *Leptophobia semicæsia.*

Pieris semicæsia, Felder, Reise der Nov., Lep. ii. p. 176 (1865).

Bogota.

This species seems to approach *L. penthica*, but with no white on upper surface of secondaries; the secondaries and apex of primaries below silvery rather than nacreous. The description almost agrees with *L. philoma*, but Felder speaks of the subapical fasciole as tripartite.

12. *Leptophobia olympia.*

Pieris olympia, Felder, Wien. ent. Monatschr. v. p. 80 (1861).

E. Peru (registered Nauta). B. M.

In the Hewitson collection a specimen, from Bolivia, stands under *L. tovaria*, from which species I think *L. olympia* very doubtfully distinct; it was described from a Venezuelan example.

13. *Leptophobia tovaria.*

Pieris tovaria, Felder, Wien. ent. Monatschr. v. p. 80 (1861).

♀, Bogota. B. M.

14. *Leptophobia subflavescens.*

Pieris subflavescens, Kirby, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 362 (1887).

New Grenada.

Near to *L. tovaria*; almost the same on upper surface.

15. *Leptophobia philoma.*

Pieris philoma, Hewitson, Equat. Lep. p. 79 (1870).

Ecuador. Type coll. Hewitson.

Should this prove to be Felder's *L. semicæsia* it will have to sink; but it is possible that the species of Bogota may prove distinct.

16. *Leptophobia cæsia.*

Pieris cæsia, Lucas, Rev. et Mag. de Zool. 1852, p. 299; Hewitson, Exot. Butt. ii., *Pier.* pl. vi. figs. 43, 44 (1861).

Quito and Ecuador. Coll. Hewitson and B. M.

17. *Leptophobia tenuicornis.*

Leptophobia tenuicornis, Butler and Druce, Cist. Ent. i. p. 110 (1872); Lep. Exot. p. 116, pl. xliii. fig. 4 (1872).
Pieris tenuicornis, Godman and Salvin, Biol. Centr.-Am., Lep. Rhop. vol. ii. p. 137, pl. lxii. figs. 8-11 (1889).

Colombia, Chiriqui, Costa Rica. B. M.

18. *Leptophobia cinerea.*

Pieris cinerea, Hewitson, Trans. Ent. Soc. ser. 3, vol. v. p. 563 (1867).
Pieris menthe, Hopffer, Stett. ent. Zeit. 1874, p. 335.

Ecuador. Coll. Hewitson and B. M.

PIERIS, Boisduval.

This genus separates into several natural groups, the first being the *P. demophile* group, in which the females vaguely remind one of Ithomiinæ (such as *Sais*); the second is the *P. viardi* group, the females of which are often more like *Tithorea*, the under surface of the secondaries often richly coloured in both sexes; the third is represented by *P. phileta* (*P. monuste* auct. plur., nec Linn.) and its varieties, somewhat short-winged *Belenois*-like butterflies; the fourth and last is represented by the *P. buniæ* group, and unites characteristics of *Catopsilia* and *Ganoris*, all the males exhibiting well-developed patches and streaks of thickened scaling on the wings, but combined with the long slender antennæ and style of neuration of the later types of the Pierinæ.

Section 1.

1. *Pieris demophile.*

♀. *Papilio demophile*, Clerck, Icones, pl. xxviii. fig. 4 (1764).
Papilio molphea, Cramer, Pap. Exot. ii. pl. cxvi. C (1779).
♂. *Papilio amathonte*, Cramer, *l. c.* A, B.

Pernambuco, St. Paulo, Tapajos. B. M.

2. *Pieris calydonia.*

Pieris calydonia, Boisduval, Sp. Gén. Lép. i. p. 439 (1836).

Venezuela, Panama, Nicaragua. B. M.

This species varies a good deal in the width of the black-brown borders, our Venezuelan examples having considerably broader borders than those from Panama and Nicaragua.

3. *Pieris leptalina.*

Pieris leptalina, Bates, Journ. Entom. i. p. 236 (1861).
Pieris pisonis, Hewitson, Exot. Butt. ii., *Pier.* pl. vi. figs. 40, 41.

E. Peru (registered "Nauta"). B. M.

4. *Pieris kiçaha.*

Pieris kiçaha, Reakirt, Proc. Ent. Soc. Phil. ii. p. 349 (1863).
Pieris notistriga, Butler and Druce, Cist. Ent. i. p. 111 (1872).

Rio Dagua, Colombia. B. M.

5. *Pieris marana.*

Pieris marana, Doubleday, Ann. & Mag. Nat. Hist. vol. xiv. p. 421 (1844); Hewitson, Exot. Butt. ii., *Pier.* pl. vi. fig. 42 (1861).

West Indies?, Panama, Chimborazo. Type B. M.

Doubleday's type was clearly collected either in the West Indies or on the coast of Central America (as evidenced by all the species from the same collection).

6. *Pieris pandosia.*

Pieris pandosia, Hewitson, Exot. Butt. i., *Pier.* pl. ii. fig. 14 (1853), ii., *Pier.* pl. vi. fig. 39 (1861).

Venezuela. B. M.
The type is in the Hewitson collection.

7. *Pieris pylotis.*

Pieris pylotis, Godart, Enc. Méth. ix. p. 158 (1819).

Brazil. B. M.
The black spot on the primaries gives this species a somewhat aberrant aspect, but I think it is best located here.

Section 2.

8. *Pieris viardi.*

♀. *Pieris viardi*, Boisduval, Sp. Gén. Lép. i. p. 439 (1836).
♂. *Pieris habra*, Doubleday, Ann. & Mag. Nat. Hist. xvii. p. 22 (1846); Gen. Diurn. Lep. pl. vi. fig. 1 (1847).

♂, Honduras (Doubleday's type). B. M.
In the Hewitson collection both sexes of this species stand together.

9. *Pieris laogore.*

Pieris laogore, Godman and Salvin, Biol. Centr.-Am., Rhop. ii. p. 134 (1889).

Mexico.
Differs from the preceding in the whole of the yellow markings in both sexes being replaced by orange.

10. *Pieris tithoreides*, sp. n.

♂. Above much like *P. locusta*, but usually with one or two extra white spots in the border and with the narrow part of the border, at the posterior angle of the primaries, better defined: on the under surface the differences are better marked, the border of the primaries being produced inwards upon the first and second median branches as in *P. locusta*, but not so imperfectly, the greyish diffusion of that part of the border in *P. locusta* being filled in in the present species: in the secondaries the red, orange, and yellow markings are all less vivid and there is a broad pale belt across the wing which includes the greater part of the discoidal cell, so that the lower ramus of the dark discoidal furca is clearly seen to be bordered on both sides with chrome-yellow; the submarginal yellow spots are rather more elongated than in *P. locusta.*

Expanse of wings 67 millim.

♀. Curiously resembles *Tithorea Pavonii.* Above black: the primaries with a broad sulphur-yellow patch, paler externally, commencing just above the base of the median vein and divided by this vein and its first branch, at the middle of which branch it terminates; below this a diffused yellow streak traversed by the submedian vein; a slightly irregular pearly white oblique macular band beyond the cell from costa nearly to outer margin, its inner edge angulated at subcostal vein, its last inferior spot small and well divided from the remaining divisions; two spots placed subapically, the upper one bifid; a larger spot near posterior angle: secondaries with brown costal area, below which is a broad sulphur-yellow belt, whitish at each extremity, from abdominal margin to second subcostal branch, above which are a few yellow scales; this belt is deeply incised upon the veins, but especially upon what would now be called the "upper" radial; a submarginal series of white spots. On the under surface the primaries are nearly as above, excepting that there is a pale patch at apex tinted with grey-brownish and yellow, and partly enclosing the bifid subapical spot; below this and near outer border are three bifid yellow spots, the last being the terminal spot of the postmedian stripe: the secondaries nearly resemble those of the male, but are altogether more vivid in colouring, the broad belt crossing the cell being mostly white and the streak bordering the discoidal <-shaped character (false vein) bright cadmium-yellow.

Expanse of wings 71 millim.

Male and female, Ecuador; two males and one female, Quito: coll. Hewitson. Two males, Chimborazo; female, Ecuador: B. M.

The types are in the Hewitson series.

11. *Pieris mandela.*

Pieris mandela, Felder, Wien. ent. Monatschr. v. p. 80 (1861).

Venezuela. B. M.

Both sexes are in the Hewitson collection unlabelled with locality.

12. *Pieris apicalis*, sp. n.

♂. Allied to *P. mandela*, but usually considerably larger, the apical border on the primaries with more oblique inner edge, its inferior continuation on outer border distinctly narrower, the upper subapical white spot larger; secondaries with the posterior half of the outer border decidedly broader: primaries below with the apical patch and border still more reduced, only one whiter submarginal spot (or at most two); secondaries with decidedly whiter, mostly white, irregular central belt.

Expanse of wings 70–79 millim.

♀. Not unlike the female of *P. mandela*, but much larger, the secondaries above with the whole base almost to the end of the cell suffused with greyish brown: the primaries on under surface not sulphur-tinted at base and the secondaries more pink in tint, the brown portions more coffee-coloured, the submarginal spots larger.

Expanse of wings 74 millim.

Two males, Quito and Upper Amazons: in coll. Hewitson. Male, Bogota; female, E. Peru: B. M.

The type of the male is from Quito, that of the female from E. Peru (registered "Nauta") *. Hewitson referred one male of this species to *P. mandela* and the other to *P. locusta*, being guided solely by expanse of wings.

13. *Pieris locusta.*

Pieris locusta, Felder, Wien. ent. Monatschr. v. p. 81 (1861); Reise der Nov., Lep. ii. p. 175, pl. xxv. figs. 8, 9 (1865).

Two males, one female, Bogota. B. M.

The female is a good deal like *P. noctipennis*, the chief difference being that the secondaries show a greyish nebulous subcostal belt, barely visible until beyond the discoidal cell, and two sharply defined, apical, submarginal, creamy-white spots. Looking at the illustrations of both sexes in the 'Biologia Centrali-Americana,' I must admit that I greatly doubt the specific distinctness of the two forms.

14. *Pieris noctipennis.*

♀. *Pieris noctipennis*, Butler and Druce, Cist. Ent. i. p. 111 (1872); Lep. Exot. p. 118, pl. xliii. fig. 7 (1872).

♀, Nicaragua. In coll. Hewitson.

The male is represented in the 'Biologia' with rather more submarginal spots and a paler central belt across the under surface of the secondaries than exist in *P. locusta* from Bogota; the female also, from which the figure is taken, and that in the Hewitson collection both have the white area on the primaries somewhat yellower than in that sex of *P. locusta* or than in my type. I am afraid that none of these slight differences will prove to be even locally constant, but in the absence of positive proof I temporarily retain the two forms as possibly separate.

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* I have frequently called attention to the fact that the specimens thus registered are all believed to have been collected in E. Peru.

Section 3.

15. *Pieris phileta.*

♀. *Pieris phileta,* Fabricius, Syst. Ent. p. 471 (1775).
Mancipium monuste, Hübner, Samml. exot. Schmett. i. pl. cxxxiv. figs. 1-4.
Mylothris hippomonuste, Hübner, Verz. bek. Schmett. p. 91 (1816).
Pieris orseis, Godart, Enc. Méth. ix. p. 141 (1819).
Pieris virginia, Godart, *l. c.*
Pieris eubotea, Godart, *t. c.* p. 144 (1819).
Pieris feronia, Stephens, Ill. Brit. Ent., Haust. i. p. 149 (1828).
Pieris hemithea, Hübner, Samml. exot. Schmett., Zutr. figs. 693, 694 (1832).
Pieris cleomes, Boisduval and Leconte, Lép. Am. Sept. p. 43, pl. xvi. (1833).
Pieris evonima, Boisduval, Sp. Gén. Lép. i. p. 493 (1836).
Pieris vallei, Boisduval, *t. c.* p. 494 (1836).
Pieris joppe, Boisduval, *t. c.* p. 495 (1836).
Pieris suasa, Boisduval, *t. c.* p. 549 (1836).
Papilio albusta, Sepp, Surin. Vlind. iii. pl. cxli. (1855).
Pieris automate, Burmeister, Descr. Rep. Arg. v. p. 85, pl. iv. fig. 11 (1878).

Southern States of N. America, the West Indies, Central America, and a great part of the Southern continent.

With so wide a range it is naturally extremely variable, a perfect series of gradations existing between typical *P. phileta* and the feebly bordered *P. automate*; these variations may be somewhat arbitrarily divided into seven grades, none of them apparently being confined to any particular region.

The species has hitherto stood in collections as *P. monuste* of Linnæus, with which some of the older authors were the first to confound it; but the description in the 'Museum Ludovicæ Ulricæ' cannot refer to this butterfly, inasmuch as, in the first place, no mention is made of the dentated character of the inner edge of the outer border of primaries, but, on the contrary, that of the secondaries is specially described as "denticulato-fuscus"; in the second place, no mention is made of the elongate subapical white spots on the primaries; and, lastly, the wings below are said to be concolorous, excepting that the borders show a greyish shade answering to those of the upper surface—"loco fusci coloris tantum cinerascentes ad marginem." The description is much more likely to be intended for *Udaina cynis*, only the under surface of the primaries in the latter species is almost too strongly coloured and the dentated character of the border still obtains on the upper surface. The type being lost, it is by far the best plan to let the name lapse unless something perfectly answering to the description can be found. Possibly *Mylothris phaola* or an allied form may be intended.

Section 4.

16. *Pieris*, sp. n.?

Four specimens of a species allied to *P. sevata*, but with more produced costa and more broadly bordered outer margin to primaries; the apex of primaries and the secondaries below sericeous pink.

Four males, Panama. B. M.

I have been unable to find a description of this species, which, however, I prefer to leave for the consideration of the authors of the 'Biologia Centrali-Americana.' It vaguely resembles *Glutophrissa castalia*, but differs in structure and in the colouring of the under surface; the primaries with much straighter outer margin, all the wings with streaks of thickened scales bordering the veins, and the anal segment with no trace of the dense prominent brush projecting from the base of the clasps (the presence of the brush in both sexes being the chief character upon which I founded the genus *Glutophrissa*), a feature wholly wanting in either sex of *Pieris*.

17. *Pieris sevata.*

Pieris sevata, Felder, Wien. ent. Monatschr. v. p. 81 (1861).

Male and female, Venezuela. B. M.

Bears a curious resemblance to some of the extreme types of *P. pyranthe*.

18. *Pieris ausia.*

Pieris ausia, Boisduval, Sp. Gén. Lép. i. p. 531 (1836).

One male, Mexico: B. M. Two females, without locality: coll. Hewitson.

There are four males in the Hewitson collection from Bolivia which must, I think, represent a variety of this species; they are individually very inconstant in the width and character of the apical border of the primaries.

19. *Pieris buniæ.*

Catophaga buniæ, Hübner, Samml. exot. Schmett. ii. pl. cxxv. figs. 1, 2 (1816–36).
Pieris endeis, Godart, Enc. Méth. ix. p. 158 (1819).

Brazil, Rio Janeiro. B. M.

20. *Pieris phaloe.*

Pieris phaloe, Godart, Enc. Méth. ix. p. 156 (1819); Lucas, Lep. Exot. pl. xxvii. fig. 1 (1835).

Pará, Tapajos, Venezuela. B. M.

21. *Pieris imperator.*

Pieris imperator, Kirby, Trans. Ent. Soc. 1881, p. 357; Rhop. Exot. i. *Pier.* pl. i. figs. 1, 2 (1888).

One male, Ecuador: coll. Hewitson. Id. male and female var.?, Obydos (*E. E. Austen*): B. M.

22. *Pieris diana.*

Pieris diana, Felder, Wien. ent. Monatschr. v. p. 81 (1861).

Two males, New Granada: coll. Hewitson. One male, Brazil: B. M.

23. *Pieris Van-Volxemii.*

Pieris Van-Volxemii, Capronnier, Ann. Soc. Ent. Belg. xvii. p. 11, pl. i. fig. 1 (1874).

Buenos Ayres.

Probably intermediate between *P. diana* and *P. amaryllis,* but smaller than either.

24. *Pieris amaryllis.*

Papilio amaryllis, Fabricius, Ent. Syst. iii. 1, p. 189 (1797); Donovan, Ins. Ind. pl. xxviii. fig. 1 (1800).

Male and female, Jamaica. B. M.

25. *Pieris Josepha.*

Pieris Josepha, Godman and Salvin, Ann. & Mag. Nat. Hist. ser. 4, vol. ii. p. 150 (1868).

One male, Guatemala. B. M.

26. *Pieris Josephina.*

Pieris Josephina, Godart, Enc. Méth. ix. p. 158 (1819); Hübner, Samml. exot. Schmett. ii. pl. cxxvi. (1819-36).

Male and female, St. Domingo, and male, Mexico. B. M.

Mr. Heron and I have compared our specimens with Godart's types, now in the Edinburgh Museum.

Nov. 1898

XXI. *On some new species of African Pierinæ in the collection of the British Museum, with notes on seasonal forms of* Belenois. By ARTHUR G. BUTLER, Ph.D., F.L.S., &c.

[Read November 16th, 1898.]

WHILST arranging the Pierinæ of the genus *Phrissura*, I discovered three males of a species which is certainly undescribed, mixed up with the series of *P. sylvia* (the dry-season form of *P. eudoxia*), and in the Hewitson collection I discovered the female of the same species I now describe.

Phrissura perlucens, sp. n.

♂. Above nearly resembling *P. sylvia*, but with the inner edging of the black outer border of primaries more blurred, less distinctly dentate-sinuate, the basal patch of lemon yellow without the least tinge of orange; on the undersurface the border far more distinct than in *P. sylvia*, irrorated with dark brown, yellowish externally; the base bright lemon yellow as above (not orange, as in *P. sylvia*); the secondaries also with the costal area at base bright lemon yellow instead of orange. Expanse, 50—61 millim.

♀. Similar in pattern to the female of *P. sylvia*, but with the ground-colouring of all the wings above pure white; the border of primaries and marginal spots of secondaries rather broader than in *P. sylvia*; primaries below bright lemon yellow at base, slightly washed with saffron on costa; apical area irrorated with grey-brownish and with an oblique subapical stripe of the same colour; secondaries with the base of costal area golden yellow, slightly more saffron on costal margin: no trace of the ochreous bordering common to the undersurface of all the wings in *P. sylvia*. Expanse, 64 millim.

Hab. ANGOLA and GOLD COAST (*Mus. Brit.*).

Phrissura narcissus, sp. n.

♀. Primaries bright ochreous; a grey subapical crescentic band; veins pale buff, partly dividing a marginal series of black spots;

secondaries bright lemon yellow with a marginal series of cordiform dark brown spots terminating the nervures; primaries below ochreous with pale creamy costa, the cell suffused with saffron towards the base, but not abruptly; subapical grey band obsolete, marginal black spots smaller than above, fringe black; secondaries butter yellow with deep saffron basi-costal area; spots on margin as above; pectus creamy yellow; abdomen flesh-tinted. Expanse, 59 millim.

Hab. ANGOLA (*Coll. Hewitson*).

This is so strikingly distinct from everything else in the genus that I do not hesitate to name it in spite of the fact that it is a female; the male will probably be found to have a broad blackish border to the primaries. In the genus *Belenois*, of which I have recently completed the arrangement, the seasonal forms are always tolerably well-defined. *Belenois*, though nearly related to *Phrissura*, has a different style of marking; the males never have a pencil of hair between the anal clasps as have those of *Phrissura;* the primaries as a rule are more produced, the costa being longer, so that the wing-outline more nearly resembles that of *Appias;* there are however exceptions to this rule in a few specimens which more nearly approach *Phrissura* in outline. A few notes on some of the seasonal forms in *Belenois* may perhaps be useful to the systematist; they follow the usual rules of variation which have, in many cases, been more or less satisfactorily proved by collectors and breeders of Pierinæ; so that there can be no reason for refusing to accept them as facts. If they are rejected as seasonal forms, they must be accepted as variations, inasmuch as (in nearly every case) the intermediate phase occurs.

Belenois hedyle, Cramer.

This is a wet-season phase, of which *B. rhena* is the female of the dry phase. In the Museum there are six males and one female of the wet phase in addition to five examples in the Hewitson collection; of a perfectly intermediate phase we have five males; of the dry phase we have three males and two females, one additional example being in the Hewitson collection.

Belenois thysa, Hopff.

The Angolan form of this species differs somewhat from the more Southern and the Eastern type of the species, representing a slight local variation of which *B. meldolæ* is the dry phase. The typical figures of the species represent the intermediate phase, the wet phase of which has heavier black borders with which the subapical spots on the primaries are often united ; the dry phase is represented by *B. sabrata.* A singular form of the species occurs sporadically in the area bounded by the Victoria Nyanza and Lake Nyasa; the females of this form differ so remarkably in outline and in the more or less lilacine greyish suffusion of the under surface that one might be excused for believing that they represented a distinct species.

Belenois dentigera, Butl.

This species, which is related to *B. calypso*, was based upon a dry-season male collected by Emin Pasha. The intermediate phase is represented by *B. welwitschi* of Rogenhofer (who states that it was collected in Angola !); of this phase we have a male obtained by Emin Pasha at Kangasi and three males from Nyasa-land. Of the wet phase, a heavily marked and more brilliantly coloured edition of the intermediate phase, we possess four males and one female from Nyasa-land.

Belenois instabilis, Butl.

Of this species we possess both sexes of all the phases, the wet form of the female somewhat resembling that sex of *B. creona* on the upper surface; both sexes are very heavily black-veined on the under surface. The intermediate phase bears much resemblance on the under surface to the wet phase of *B. dentigera*, excepting that the insect is considerably smaller, the apical markings on the primaries are sulphur yellow and the median vein of the secondaries, with its branches, is black. In the dry form the black markings are reduced on both surfaces, and the secondaries below are more ochraceous.

Belenois subeida, Felder.

Related to the preceding; we possess only single males of the wet and intermediate phases and a female of the dry phase. The species doubtless replaces *B. instabilis* in North Africa: whilst it is much more heavily bordered on the upper surface, it is altogether less brilliantly coloured below.

Belenois crawshayi, Butl.

We now possess wet, intermediate, and dry phases of both sexes of this species; *B. diminuta* was based upon the female of the dry phase.

In the collection made by Dr. Gregory in British East Africa is a species related to the preceding which I confounded with the Eastern form of *B. zochalia*: a careful study of the two has now convinced me that this was an error, the form of the wings being constantly very different, and the costal margin of the primaries and the abdominal margin of the secondaries being noticeably shorter.

Belenois formosa, sp. n.

♂ *Belenois zochalia* (part), Butler, P.Z.S., 1894, p. 579, pl. xxxvii, fig. 3.

♀. Primaries white above, the basal area nacreous; secondaries white or pale sulphur yellow; markings as in *B. zochalia*.

At first I was inclined to regard this as the dry phase of the East-African representative of *B. zochalia*, but the coloration and vivid marking of the male are so distinctly characteristic of a wet-season phase, that I was compelled to abandon this idea as soon as it occurred to me. Undoubtedly the pattern of the females of both forms is very similar, but nevertheless I feel sure that two species exist; we have five males and three females of *B. formosa*.

Of typical *B. zochalia* from South Africa we have wet, intermediate, and dry forms of both sexes; they differ chiefly in the definition of the black markings on the under surface.

Belenois severina, Cramer.

Of *B. severina* we have an immense series commencing with the wet-season *B. infida* (P.Z.S., 1894, pl. xxxvii, figs. 1, 2), passing through two fairly defined intergrades, of which one is typical *B. severina*, to the extreme dry form, which nearly resembles *B. creona* on the under surface. *B. boguensis* of Felder is a Northern race of the species showing less variation, the wet phase being not much unlike the first intermediate phase of *B. severina*, but the dry phase more nearly approaches *B. creona*.

Belenois leucogyne, Butl.

This interesting species seems to possess a dry phase only.

Belenois creona, Cramer.

The wet form of this species seems to be extremely rare; we possess only one pair; above it resembles the common intermediate phase, but on the under surface the veins are lilacine grey in the male and black in the female. The best characters for distinguishing *B. creona* from *B. severina* consist in the smallness of the subapical spots on the upper surface of the primaries in the males, the black and scarcely spotted border of the secondaries in this sex and the white ground-colour of the female streaked on the under surface with deep ochreous. *B. creona* is essentially a West-African species; *B. severina* Southern and Eastern.

Belenois johannæ, Butl.

I know this only as a dry-season phase; it is a very distinct species.

Belenois mesentina, Cramer.

We have a very extensive series of this species, *B. augusta* = *agrippina* = *lordaca* being the wet phase, *B. mesentina* = *syrinæ* intermediate, *B. auriginea* dry, and *B. taprobana* being an insular dry phase differing in the blacker outer border to the male primaries, on which the subapical spots are less prominent.

Belenois teutonia, Fabr.

The wet form is *B. clytie* = *niseia*; the intermediate form shows a narrow break between the discocellular bar and outer border in both the primaries and secondaries of the female, but no noticeable difference in the male; in the dry form the discocellular bar is well separated from the border, and the white spotting of the border in both sexes is clearly defined.

Belenois peristhene, Boisd.

The wet form has the secondaries below black with a submarginal row of orange spots. We have two examples from New Caledonia in which the whole basal area of the primaries below is also orange, as in *B. java*; these are probably either reversional sports or the result of hybridism between the two species. The intermediate form differs in having several squamose subbasal orange patches on the under surface of the secondaries; the dry form has the cell and a series of patches below it white, the basicostal patch and submarginal spots remaining orange.

Belenois clarissa, Butl.

The seasonal differences in this species much resemble those of *B. peristhene*, the orange spots of the under surface being replaced by sulphur yellow; we have all the phases in both sexes.

Of *B. picata* we possess only a dry-season phase.

Belenois java, Sparrm.

B. deiopeia, Don., is the dry phase. We possess an intermediate from the New Hebrides; as the species occurs as far to the East as the Friendly Group, it certainly crosses the range of *B. peristhene*, and is quite likely to hybridize with it.

Belenois raffrayi, Oberth.

This is a wet-season form, and, without examining specimens of the allied *B. margaritacea*, I would not suggest that there may be more than affinity between them. It is quite possible that they may be perfectly distinct.

Respecting *B. gidica*, much confusion has arisen; I may begin by stating emphatically that *B. gidica* is not the wet-season form of *B. abyssinica*, and that *B. allica* of Oberthür is not the *B. allica* of Boisduval, but is identical with *B. abyssinica*. Furthermore, there are two South-African species of the group, easily separated by any one who has an eye for form and pattern.

Belenois gidica, Godt.

Differs at a glance from *B. gidica* of authors in the lack of continuity between the discocellular black spot of primaries with the costal borders, the distinctly narrower and blacker outer borders of the primaries, the fourth white spot on which opens without break into the ground-colour, so as to form a quadrate excision of the border. On the under surface the differences are much greater; the apical brown border is unbroken, with three small whitish spots internally as above, whitish veins, and five tear-like whitish submarginal dots between the veins. Secondaries with irregular brown borders interrupted by diffused whitish spots internally and enclosing six distinct submarginal white spots; veins pale; an oblique abbreviated brown spot at the end of the cell, but no other markings. Expanse, 57 millim.

Hab. CAPE OF GOOD HOPE.

Two males of the wet-season phase of this very distinct species were in the Godman and Salvin collection associated with *B. gidica* of Trimen and others. To the latter I propose to restore the name of *B. westwoodi*, Wallgr.

Belenois abyssinica, Lucas.

The Godman and Salvin collection contained two males, and the Museum series a female of the wet-season phase of this species. It differs from the wet phase of *B. westwoodi* above in the almost confluent character of the marginal spots on the male secondaries; the differences below are considerable, the ground-colour being much yellower, and all the dark brown markings on the basal area of the secondaries being wholly erased, bringing it decidedly nearer to *B. gidica*.

The differences between the dry-season forms of the two species do not appear to be so marked, though they are of the same nature, the rusty ground-colour not being so well suited for emphasizing the absence of dark markings as the primrose yellow of the wet-season phase.

Belenois westwoodi, Wallgr.

We have a long series of this species, the female of which is very variable. I suspect that the most typical wet phase is represented by the more heavily bordered and distinctly marked examples, but the change from heavy to light borders is so gradual that I have not attempted to distinguish an intermediate phase. One of our female examples in which the upper surface is very lightly marked shows a distinct approach to the dry form in the coloration of the under surface. Of the dry phase we have five examples from Eastern Africa as far southward as Natal, and there is an equal number in the Hewitson collection.

Belenois occidentis, sp. n.

Allied to *B. westwoodi*, but distinctly larger, the apical area of the primaries irrorated with grey, the outer border greyer than in *B. westwoodi*, the irregular transverse subapical band interrupted in the middle; the veins blackened to the cell, excepting the first two median branches; the discocellular black bars continued round the end of the cell as far as or beyond the emission of the second median branch; secondaries with a well-defined black discocellular dash and several black traces of the discal markings of the under surface; black marginal spots and fringe as usual. On the under surface nearly the whole of the veins are brown, darker on the primaries; in the wet phase the primaries show a grey basal patch terminating in a black discoidal streak; the black discocellular bar is continued broadly to the first median branch along which it runs to the middle, so that it forms a large Z-shaped character; in the dry phase the discocellular bar runs backward only half way to the origin of the first median branch. In the character of the secondaries this species is like *B. westwoodi* on the under surface. Expanse, 64 millim.

Hab. Congo; Loanda (*Mus. Brit.*).

These examples were received from the Godman and Salvin collection, a male (wet phase) from the Congo, and a pair (dry phase) from Loanda. There is very little doubt that this is the species for which Boisduval proposed his manuscript name of "*Pieris allica*," but M. Oberthür having published the name as applying to *B. abyssinica*, it has become a synonym and cannot now be resuscitated.

Nov. 1898

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON,
November 15, 1898.]

A List of Butterflies obtained in the Harar Highlands by Capt. H. G. C. Swayne, R.E.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

The small collection of which the following is an account was somewhat hurriedly made, all the specimens having been secured [1] in about three days, at an elevation of from 4000 to 8000 feet on the Harar Highlands. It is therefore not surprising that most of them are a good deal shattered; some of them are nevertheless very acceptable additions to the Museum collection: one species is new.

So little is known even now of the Lepidopterous fauna of this part of Africa that every consignment received thence is of importance and is worthy of careful record, even though many of the examples may have no further value when that record has been published.

[1] They do not appear to have been netted, but rather knocked down and captured by hand.

The following is a list of the species :—

1. Limnas klugi *Butl.*
2. Byblia ilithyia *Drury.*
3. Charaxes brutus *Cram.*
4. Junonia actia *Dist.*
5. ,, octavia *Cram.*
6. ,, pyriformis *Butl.*
7. ,, cebrene *Trim.*
8. ,, clelia *Cram.*
9. ,, here *Lang.*
10. ,, orthosia *Godt.*
11. Pyrameis abyssinica *Feld.*
12. Atella columbina *Cram.*
13. Neptis agatha *Cram.*
14. Acræa serena, var. perrupta *Butl.*
15. Acræa antinorii *Oberth.*
16. Mylothris agathina *Cram.*
17. ,, yulei ♂ var. ? *Butl.*
18. ,, swaynei, sp. nov.
19. Colias electra *Linn.*
20. ,, marnoana *Rogenh.*
21. Teracolus phillipsi *Butl.*
22. ,, protomedia *Klug.*
23. Belenois mesentina *Cram.*
24. Leuceronia thalassina *Boisd.*
25. Papilio demoleus *Linn.*
26. ,, erinus, var. *Gray.*
27. ,, antinorii *Oberth.*

MYLOTHRIS SWAYNEI, sp. n.

♂. Intermediate in character between *M. trimenia* and *M. narcissus*: primaries above milk-white; the costal border blackish, widening gradually into an apical patch which curves round to join the first of three trigonal marginal spots between veins 4 and 5; internal border also blackish to external angle: secondaries bright lemon-yellow; seven small marginal black spots, the first of which (at end of costal vein) is the largest and elongated: body normal. Primaries below white, costal border sprinkled with grey scales; base of cell slightly washed with lemon-yellow; apical border lemon-yellow; a marginal series of seven black dots: secondaries as above: body normal, the pectus clothed with greenish-white hair, becoming somewhat fulvous at the side of the eyes. Expanse of wings 55 millim.

Hab. Harar Highlands.

The following specimens in the collection are worthy of mention :—

The example of *Charaxes brutus* is not only interesting on account of the narrowness of the white band across the primaries, but also because of the prominence of the grey lunulated submarginal line of the secondaries.

Acræa antinorii, of which two rather damaged specimens were obtained, was previously known to me only by the illustration (Annali del Museo Civico di Genova, xv. tav. i. fig. 3).

The male of *Mylothris yulei* more nearly approaches the typical female than the male which I described; but there is not sufficient evidence to warrant their separation at present.

The example of *Colias marnoana* is larger than those which we previously possessed and tends to link it to *C. sareptensis.*

The two males of *Papilio erinus* are actually more or less intermediate between the var. *pseudonireus* and *Papilio bromius*; it therefore seems probable that *P. erinus* and *P. bromius* will eventually have to be united, in spite of the considerable differences which exist on both surfaces between the extreme forms.

A pair, unfortunately much shattered, of *P. antinorii* was obtained.

Nov. 1898

[*From the* Proceedings of the Zoological Society of London, November 15, 1898.]

On a small Collection of Butterflies made in the Chikala District, British Central Africa, by Mr. George Hoare[1]. By Arthur G. Butler, Ph.D., F.L.S., F.Z.S., &c.

The present series was forwarded to our Secretary for me by Mr. J. F. Cunningham, Secretary to the Administration, in the hope that they might be useful for the Museum collection, to which I may at once say that it forms a most welcome addition.

Chikala, north end of Lake Shirwa, being new collecting-ground, might be expected to yield new species to the explorer; but the present consignment (which comprises examples of only twenty-one species) contains nothing hitherto unnamed, although one of the ten forms of *Charaxes* in the collection is of considerable interest to me, not only as being the first female specimen which we have acquired, but as proving that I was correct in placing *C. lactetinctus* next after *C. azota* in my arrangement of the genus.

Considering that most of the specimens in this collection belong to the muscular-winged genus *Charaxes*, we may congratulate Mr. Hoare that so many of them are in good condition. The following is a list of the species:—

1. Amauris whytei Butl.

A single perfect male example.

2. Melanitis solandra Fabr.

One female.

3. Eurytela hyarba, var. angustata Auriv.

A perfect male, with the band on the secondaries nearly as wide and the markings below as distinct as in the typical Western form.

4. Charaxes brutus Fabr.

Two perfect male specimens.

5. Charaxes pollux Cram.

A pair. The female of this species is rather rare.

6. Charaxes castor, var. flavifasciatus Butl.

A nearly perfect male.

7. Charaxes guderiana Dewitz.

A perfect male.

8. Charaxes azota, var. nyasana Butl.

A nearly perfect female. Quite new to the Museum collection.

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[1] Assistant Collector of Revenues for the Chikala District.

The female of the Delagoa Bay form (the typical *C. azota* of Hewitson) has been figured by Mrs. Monteiro in her 'Delagoa Bay, its Natives and Natural History,' frontispiece, fig. 1.

9. Charaxes macclounii Butl.

Four females, three of them a little worn, but not much broken.

10. Charaxes candiope Godt.

A male almost perfect.

11. Charaxes cithæron Feld.

Two perfect males.

12. Charaxes bohemani Feld.

Three females, a little worn.

13. Charaxes varanes Cramer.

Five examples, two being almost perfect. This species usually comes to hand in very poor condition.

14. Junonia sesamus Trimen.

Two fine specimens.

15. Pyrameis cardui Linn.

A slightly worn male.

16. Hypanartia schœneia Trimen.

A rather rubbed male.

17. Euralia wahlbergi Wallgr.

A perfect male.

18. Catopsilia florella Fabr.

Two much-worn females.

19. Papilio similis Cram.

A slightly damaged male.

20. Papilio demoleus Linn.

Two good males.

21. Papilio merope, var. dardanus Brown.

Four males and one female in good condition.

Nov. 1898

[*From the* PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, November 15, 1898.]

On a small Collection of Butterflies from British East Africa, obtained at the end of 1897 and beginning of 1898 by Mr. R. Crawshay. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

In a letter addressed to me from Kibwezi, Ukamba, and dated March 5th, 1898, Mr. Crawshay writes :—

"A line in pencil to let you know my movements, and that I am on my way to the promised land—of this Protectorate at least.

"I hope you have received the few, *very few*, insects I sent you by Wilson, of the National Bank of India in Mombasa, who was kind enough to take charge of them. They are so few that I was almost ashamed to send them ; but, having promised, I did so in the hope that perhaps the Skippers, or at any rate one of them, would prove of interest.

"I am now on my way to Machako's, and am camping here for one day to ration my porters, rest them, rest myself, and rearrange my loads—a never-ending task! African travel on foot is slow and very irksome and at times positively exasperating, I can assure you : one has so many difficulties to contend with, the chief perhaps being the waywardness of one's porters, and indeed of almost all one's dusky followers, to say nothing of discomforts innumerable. But it is intensely fascinating for all that, and I can't tell you how glad I am to get back to the old life I love so well.

"Certainly British East Africa, and especially the Ukamba Province, is more healthy than British Central Africa : one feels that at every breath.

"It is hot, very hot, but also very dry ; and so one does not feel the temperature nearly so much as one would do otherwise.

"I took a magnificent pair of Spiders—huge they are even for Africa—on the dry plains S.E. of this, three days ago.

"Hitherto I have seen no four-footed game, but there is plenty ahead."

The collection was handed over to me by Mr. Wilson, and I found it to consist of examples of 21 species—most of them collected at Takaungu, north of Mombasa, between the 19th of November and 6th of December, 1897 ; the remainder having been obtained at Mombasa on the 23rd January, 1898.

As usual with Mr. Crawshay's collections, the specimens are in good condition, and although none of them are new to science, several are of interest ; as, for instance, a dry-season female of *Ypthima pupillaris*, two highly coloured males of *Lachnocnema tibullus*, differing greatly in size, the somewhat rare white form of the female of *Teracolus imperator*, a dry-season female of *T. dissociatus*, a very tiny and somewhat aberrant male of *T. omphale*, the intermediate phase of the red-tipped variation of *T. calidia*, and two fine males of *Eronia dilatata*. The *Hesperiidæ*, though not new, were welcome additions to our series of two rather handsome species.

The following is a list of the species, with a few notes by the collector :—

NYMPHALIDÆ.

1. LIMNAS CHRYSIPPUS var. KLUGII Butl.

Two females, Mombasa, 23rd January, 1898.

2. YPTHIMA PUPILLARIS Butl.

A dry-season female, Mombasa, 23rd January, 1898.

3. JUNONIA CLELIA Cramer.

♀, Takaungu, 3rd December, 1897.

LYCÆNIDÆ.

4. CATOCHRYSOPS OSIRIS Hopff.

Two males differing greatly in size, Mombasa, 23rd January, 1898.

"Plentiful, but difficult to see" (*R. C.*).

5. AZANUS JESOUS Guér.

♀, Takaungu, 6th December, 1897.

6. TARUCUS PLINIUS Fabr.

A tiny female, Takaungu, 6th December, 1897.

7. LACHNOCNEMA BIBULUS Fabr.

Two males, Takaungu, 3rd December, 1897.

"Taken playing together and disputing for the same perch on a rose-bush" (*R. C.*).

8. VIRACHOLA ANTALUS Hopff.

♂, Mombasa, 23rd January, 1898.

"Plentiful, but difficult to see" (*R. C.*).

9. IOLAUS PHILIPPUS Fabr.

♂, Takaungu, 6th December, 1897.

PAPILIONIDÆ.

10. TERACOLUS IMPERATOR Butl.

♂ ♀, Takaungu, 3rd and 5th December, 1897; ♂, Mombasa, 23rd January, 1898.

11. TERACOLUS DISSOCIATUS Butl.

♀ *dry form*, Takaungu, 5th December, 1897.

"A frequenter of dense scrubby bush" (*R. C.*).

12. TERACOLUS EVARNE Klug(?).

♂ *dry form*, Takaungu, 3rd December, 1897.

This example has the pattern of the variety to which I gave the name of *T. syrtinus*, but the upper surface is almost pure white; it may possibly be a dry-season male of the preceding species from which the usual rosy coloration of the under surface is wanting. The dry phases of several of the species of this genus are much more similar than the wet phases, and single examples which differ from the typical variation are consequently sometimes not to be identified with certainty, but have to await further evidence.

13. TERACOLUS XANTHUS Swinh.

♀, Takaungu, 5th December, 1897.

14. TERACOLUS OMPHALE Godt.

♂, Takaungu, 5th December, 1897.

The smallest male I have seen and somewhat aberrant in the pattern of the primaries, the black border not reaching the external angle, and the subapical orange patch narrow, not angulated internally, and wanting its last or lowest section.

15. TERACOLUS CALLIDIA Grose-Smith.

♀, Takaungu, 5th December, 1897.

The intermediate phase of the red-tipped variety.

16. TERACOLUS CATACHRYSOPS Butl.

♂, Takaungu, 6th December, 1897.

A dry-season example having the spots across the secondaries larger than usual. As in *T. protomedia* the wet and dry phases of this species are indicated by the brown or crimson bands across the under surface of the secondaries.

17. LEUCERONIA BUQUETII Boisd.

♂, Takaungu, 3rd December, 1897.

18. ERONIA DILATATA Butl.

Two males, Takaungu, 6th December, 1897.

19. PAPILIO DEMOLEUS Linn.

Two males, Mombasa, 23rd January, 1898.

HESPERIIDÆ.

20. PLŒTSIA CERYMICA Hewits.

♀, Takaungu, 19th November, 1897.

"Full of large brown ova" (*R. C.*).

21. RHOPALOCAMPTA KEITHLOA Wallgr.

Four specimens, Takaungu, 3rd and 5th December, 1897.

"Fond of perching on outstanding branches of mangrove trees" (*R. C.*).

12. Teracolus [illegible] Kirby(?).

♂, dry form, Takaunga, 3rd December, 1897.

This example has the pattern of the variety to which I have the name of *T.* [illegible], but the upper surface is almost pure white; it may possibly be a dry-season male of the preceding species from which the usual rosy colouration of the under surface is wanting. The dry phases of several of the species of this genus are much more similar than the wet phases, and single examples which differ from the typical variation are consequently sometimes not to be identified with certainty, but have to await further evidence.

13. Teracolus [illegible] Swinh.

♀, Takaunga, 5th December, 1897.

14. Teracolus [illegible] Gerh.

♂, Takaunga, 5th December, 1897.

The smallest male I have seen and somewhat aberrant in the pattern of the primaries, the black border not reaching the external angle, and the subapical orange patch narrow, not angulated internally, and wanting its last or lowest section.

15. Teracolus [illegible] Rose-Smith.

♀, Takaunga, 5th December, 1897.

The intermediate phase of the red-tipped variety.

16. Teracolus [illegible] Butl.

♂, Takaunga, 6th December, 1897.

A dry-season example having the spots across the secondaries larger than usual. As in *T. [illegible]* the wet and dry phases of this species are indicated by the brown or crimson bands across the under surface of the secondaries.

17. Leuceronia [illegible] Boisd.

♂, Takaunga, 3rd December, 1897.

18. Eronia [illegible] Butl.

Two males, Takaunga, 6th December, 1897.

19. Papilio demoleus Linn.

Two males, Mombasa, 23rd January, 1898.

Hesperiidæ.

20. Pyrgus [illegible] Hewits.

♀, Takaunga, 19th November, 1897.

"Full of large brown ova" (*H. C.*).

21. [illegible] [illegible] Wallgr.

Four specimens, Takaunga, 3rd and 5th December, 1897.

"Fond of perching on outstanding branches of mangrove trees" (*H. C.*).

Nov. 1898

[*From the* Proceedings of the Zoological Society of London, November 29, 1898.]

On a Collection of Butterflies almost entirely made at Salisbury, Mashunaland, by Mr. Guy A. K. Marshall in 1898. By Arthur G. Butler, Ph.D., F.L.S., F.Z.S., &c.

The present consignment of Butterflies, with the exception of fourteen examples referable to ten species, was collected at Salisbury, and therefore is a valuable addition to the Museum series of Mashunaland Butterflies. Mr. Marshall writes:—"I think you will find one or two species among them new to the Museum collection, notably a *Baoris* and a *Kedestes*, both of which Trimen pronounced to be probably new when I first sent them to him some four years ago; but, as he has not referred to them in his recent paper, I presume he has changed his mind. This is the only example of the *Kedestes* which I have yet seen in Salisbury; I first met with it in December 1894 in the warm Mazoe valley, where I took several examples settling on low herbage on the summits of kopjes; in habits it is quite like *K. macomo.*

"I shall be glad to know the name of the unidentified *Mycalesis*; I have only met with three examples in all round Salisbury, one in April 1895, the others this year. I am somewhat in doubt as to the *Teracoli* I have sent you labelled '*pallene*,' for they are practically indistinguishable from the extreme dry form of *omphale*; yet the wet form is certainly not *omphale*, which I do not remember ever to have seen here, but seems referable to *pallene*. The larva is very similar to, though distinct from, that of *phlegetonia* as observed by me in Natal, but they are not distinguishable in the pupal stage."

One or two other notes in Mr. Marshall's communication will be referred to in the course of this paper. One new species is now described, and two new genera.

NYMPHALIDÆ.

SATYRINÆ.

1. MYCALESIS ENA ♂, Hewits.

Salisbury, 16th April, 1898.

"Probably wet form of Trimen's *selousi*, which I wrongly supposed to be *safitza*" (G. A. K. M.). I have no doubt that Mr. Marshall is correct in this opinion, for the chief difference between the two insects consists in the prominence of the ocelli in *M. ena*, the lines crossing the wings being identical in both forms.

2. LEPTONEURA CLYTUS ♂, Linn.

Cape Town, 26th April, 1897.

This, though it has the general aspect on the upperside of the following species, is certainly not congeneric with it.

TORYNESIS, gen. nov.

Differs in neuration from *Leptoneura* in the fact that the subcostals of the secondaries are emitted from the same point instead of being well separated at their origins. The antennæ with broadly spoon-shaped, instead of cylindrical spindle-shaped, club. Palpi similar, but the second joint more arched and therefore appearing to be wider in the centre, third joint rather more acuminate.

3. TORYNESIS MINTHA Hübn.

♂ ♂, Cape Town, 22nd April, 1897.

TARSOCERA, gen. nov.

Also related to *Leptoneura*, though with more nearly the aspect of *Pseudonympha*: it chiefly differs structurally from *Leptoneura* in the expanded flattened club of the antennæ and the deflexed third joint of the palpi; the club is less spoon-shaped than in *Torynesis* and the neuration is almost identical with *Leptoneura*.

4. TARSOCERA CASSINA Butl.

♂, Cape Town, 5th October, 1896.

So far as I can see, the genus *Leptoneura* will have to be restricted to *L. clytus*, *L. oxylus*, *L. bowkeri*, and *L. dingana*.

5. PSEUDONYMPHA TRIMENI Butl.

♂ ♂, Table Mountain, 15th October, 1896.

NYMPHALINÆ.

6. CHARAXES SATURNUS Butl.

♂ ♂, Salisbury, 30th March and 3rd and 10th April, 1898.

Mr. Marshall labels one of these as "?=*laticincta* Butl."; but it is not at all like that form, which I believe to be confined to the Nyasa district. I see nothing in Mr. Marshall's example to distinguish it from any other S. African specimens, whereas probably most of the Continental Lepidopterists would have unhesitatingly described the form *C. laticinctus* as a distinct species, instead of a common local aberration.

7. JUNONIA SESAMUS Trim. (and var. *calescens*).

Salisbury, 5000 feet (wet and dry forms), 13th February; dry form, 13th, 16th, 20th, and 23rd March, 1898.

It is quite evident, although Mr. Marshall bred *J. sesamus* from eggs laid by *J. calescens*, that both forms fly together in the wet season: it is therefore better to call *J. calescens* a dry phase than a dry-season form. One of Mr. Marshall's examples is labelled "Bred from egg laid by *P. octavia-natalensis*. Stages: Egg 13th–18th Febr., larva 19th Febr.–19th Mar., pupa 20th Mar.–4th Apr. 1898." This specimen therefore apparently emerged on the 5th April.

I object to the name "*Precis octavia-natalensis*" for the following reasons:—*Precis* is a synonym of *Junonia*; *octavia* is a distinct West-African species; *natalensis* was a name proposed for the wet form of *P. sesamus*, under the impression that it was a variety of the Western insect, and is objectionable because the genus already contains a species named *natalica*.

8. JUNONIA ARCHESIA Cram.

♂, dry form, Salisbury, 11th May, 1898.

9. JUNONIA CUAMA Hewits.

♂ ♂, ♀ ♀, "dry form," Salisbury, 9th, 13th, 16th, and 23rd March; 10th April, 1898.

The examples vary a good deal on both surfaces, but do not in the least resemble the following, which Mr. Marshall unaccountably labels as its "wet form" although, as usual, caught at the same time[1].

10. JUNONIA SIMIA Wallgr.

♂, "wet-form", Salisbury, 27th February; ♀, 13th March, 1898.

11. JUNONIA BOOPIS Trim.

♀ ♀, Salisbury, 4th and 18th June, 1898.

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[1] Two very distinct forms of *J. cuama* are forwarded. One of them, which is labelled "Early dry form," seems to have appeared in the latter half of March, a more heavily marked and more round winged form, taken a fortnight earlier, looks like its wet form; but is said to be the "First appearance of the dry form."

12. HAMANUMIDA DÆDALUS Fabr.

♂, ♀, "intermediate and dry," Salisbury, 23rd March, 1898.

13. NEPTIS AGATHA Cram.

Salisbury, 11th and 22nd May, 1898.

ACRÆINÆ.

14. ACRÆA SERENA, var. BUXTONI Butl.

♂ ♂, Salisbury, 16th February and 24th April, 1898.

15. ACRÆA RAHIRA Boisd.

♂ ♂, Salisbury, 4th May, 1898.

16. ACRÆA NOHARA Boisd.

♂ ♂, ♀ ♀, Salisbury, 8th and 11th January; 5th, 20th, and 23rd March; 3rd, 10th, 16th, 24th, and 27th April; 11th, 14th, 19th, 22nd, and 29th May; 4th and 18th June.

Some of the specimens are labelled "wet" and some "dry," but I see no appreciable difference between them. As before, the whole are labelled with a varietal name, apparently because in the Mashunaland and Swaziland examples the black spots on the upper surface tend to become smaller than in examples from Natal. I must confess I do not think the name is needed.

17. ACRÆA DOUBLEDAYI, var. AXINA Westw.

Salisbury, "wet and dry forms," 5th, 13th, 23rd, and 26th March; 9th and 27th April; 11th May; 5th June, 1898.

In this form (the seasonal phases of which do not seem to me to differ) the two or three submarginal dots which usually occur on the primaries of typical *A. doubledayi* are replaced by a continuation of the internervular streaks; the female also rarely shows the subapical white bar of typical *A. doubledayi*; it would therefore seem that *A. axina* is a smaller and localized form of *A. doubledayi*, but intergrades between the two types occur in our Museum series.

18. ACRÆA ANACREON, var. BOMBA.

♂ ♂, ♀ ♀, "wet and intermediate," Salisbury, 2nd January, 19th February, 9th and 16th March, 1898.

I see nothing to distinguish the "intermediate" from the wet form; our intermediate form from Nyasaland shows the fulvous submarginal spots of typical (dry-season) *A. anacreon*. I am, however, grateful to Mr. Marshall for sending us examples of the wet form in each collection, inasmuch as we did not possess it at all until 1895. One of the males now sent has almost lost the black spots on the primaries; a similar but smaller female example was obtained by Mr. Marshall on the 14th August, 1895, at Gijima (*vide* P. Z. S. 1898, p. 191).

19. ACRÆA NATALICA Boisd.

♂ ♂, Salisbury, 2nd and 6th March, 1898.

20. ACRÆA VIOLARUM and var. ASEMA Hewits.

♂, ♀ ♀, Salisbury, 5th March; 9th, 24th, and 27th April, 1898.

These, which represent typical *A. asema* (and should therefore, according to Mr. Marshall, be the dry form of *A. violarum*), are labelled "*violarum-asema*," but a female obtained on the 5th March, which is almost as heavily marked as typical *A. violarum*, is labelled also in the same way though marked with the "wet" sign. To my mind it belongs to the intermediate form, and I think conclusively proves that *A. asema* is only a form of *A. violarum*.

21. ACRÆA CALDARENA Hewits.

♂ ♂, ♀ ♀, Salisbury, 19th February; 2nd, 13th, 20th, 23rd, and 26th March; 20th and 30th April; 11th and 14th May; 5th June, 1898.

The seasonal differences appear to be slight in this species: the male seems to differ only in the better marked border to the secondaries in the wet-season, and the female in its smoky suffusion sometimes accompanied by a white belt across the primaries; but at all seasons there seems to be a certain amount of variation even in these characters, though the clouded females do not, apparently, occur in the dry season. A male with very dry characteristics and labelled with Mr. Marshall's dry sign ♂ was taken on the 26th March, and much wetter forms in April, when a wet male and dry female were taken on the same day. It seems to me that these facts are clearly in favour of my view that the seasonal forms of butterflies existed originally as simple variations, and were subsequently accommodated to seasons which afforded them most protection. Thus the males of *A. caldarena*, which show no striking seasonal differences, and which would be hardly more conspicuous at one season than another, are inconstant in their seasonal characters, whereas if the white-banded, smoky female appeared in the dry season it would probably be very conspicuous.

It may be questioned as to what advantage a protected Butterfly, such as an *Acræa*, could gain by being inconspicuous. Although the species of this genus are said to be not only offensive, but elastic and difficult to kill, it is certain that many are permanently maimed by birds and reptiles which (presumably) seize them for the first time, or have not become satisfied of their inedibility.

LYCÆNIDÆ.

22. ALÆNA NYASSÆ Hewits.

Salisbury, 3rd and 16th April, 15th May, 1898.

One of the males, having white spots in the cell, was wrongly labelled ♀.

23. Alæna amazoula Boisd.

Salisbury, 13th, 16th, and 20th March, 1898.

Judging by the specimens now sent and one or two previously in the collection, the Mashunaland examples seem to be decidedly larger than those of Natal.

24. Catochrysops hypoleucus Butl.

♂. Gadzima, 4200 feet, Umfuli River, Mashunaland, 28th December, 1895.

This is forwarded under the name of "*C. gigantea* Trim.," but, as already pointed out, my typical female of *C. hypoleucus* being identical with this species, my name cannot be set aside. Mr. Trimen supposed the type to be a worn female from Zomba, but that example was far too imperfect to base a description upon: I therefore labelled and described the far more perfect female from the Victoria Nyanza. If I could do so, I would willingly yield the point; but one cannot alter the identity of a type.

25. Catochrysops mahallokoæna Wallgr.

♀ ♀, Salisbury, 28th March and 3rd April; ♂, 19th May, 1898.

26. Neolycæna cissus Godt.

♀, Salisbury, 28th March, 1898.

27. Tarucus theophrastus Fabr.

♀, Salisbury, 19th February; ♂, 28th March, 1898.

Labelled as *T. sybaris*; but, if distinct from *T. theophrastus* (which I doubt), it cannot be *T. sybaris*.

28. Nacaduba sichela Wallgr.

♂, Salisbury, 19th May, 1898.

29. Zizera antanossa Mab.

♀, Salisbury, 19th May, 1898.

30. Castalius calice Hopff.

♀, Salisbury, 14th May, 1898.

31. Lycænesthes adherbal Mab.

♀ ♀, Salisbury, 14th May and 4th June, 1898.

32. Cacyreus lingeus Cram.

♂ ♂, Salisbury, 3rd April and 19th May, 1898.

33. Zeritis amanga Westw.

♂, Salisbury, 10th April, 1898.

34. Zeritis harpax Fabr.

♂ ♂, Salisbury, 30th March, 1898.

35. PHASIS THERO Linn.

Cape Town, 5th October, 1896.
A very dwarfed example of this rare species.

36. ASLAUGA MARSHALLI, sp. n.

♀. Allied to *A. purpurascens*, Holland; with more pronounced anal lobe to secondaries: upper surface altogether darker, vinous brown suffused with blackish, with faint purple gloss on basal half; fringes dull white with dusky central band, blacker and somewhat irregular on primaries and interrupting the outer white edging here and there, notably at the extremity of the anal lobe of secondaries, where it becomes quite black: thorax slate-blackish; head and abdomen mostly brown: under surface fleshy clay-brown, irrorated with darker brown; internal area of primaries greyish: fringes rather less strongly banded than above: pectus and base of venter dull white, legs and remainder of venter paler brown than the wings [1]. Expanse of wings 32 millim.
Salisbury, 4th June, 1898.
In the West-African *A. purpurascens* there is a well-defined brown line across the under surface of the wings and the upper surface is considerably paler.

37. THESTOR PROTUMNUS Linn.

Simonstown, 30th December, 1896.

38. ALŒIDES MALAGRIDA Trim.

Signal Hill, 22nd February, 1897.

39. MYRINA FICEDULA Trim.

Salisbury, 26th February and 6th March, 1898.

40. APHNÆUS ERIKSSONII Trim.

♂, Gadzima, 13th September, 1895.
This fine and rare species is quite new to the Museum; it is a typical *Aphnæus*, although, strangely enough, the usual silver patches are wholly absent from the under surface.

41. VIRACHOLA LIVIA Klug.

♂, Salisbury, 15th May, 1898.

PAPILIONIDÆ.

PIERINÆ.

42. MYLOTHRIS AGATHINA Cram.

♂, Salisbury, 19th May, 1898.

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[1] The sides of the abdomen appear to be banded with black, but this may have been produced by grease.

43. TERIAS BRIGITTA Cram.

Wet form. Salisbury, 6th March; 2nd, 3rd, and 6th April, 1898.
Dry form. Salisbury, 14th, 19th, and 22nd May, 1898.

I was pleased to receive a male of the dry-season form, which seems to be much rarer than the wet-season male.

44. TERIAS HAPALE Mab.

♂. *Wet-season form.* Salisbury, 16th February, 1898.

A second male (indicated as a var. in the direction of *floricola*) was obtained on the 11th May! This seems to indicate that the wet phase may sometimes occur in the dry season.

♂. *Intermediate form.* Salisbury, 30th March, 1898.
♂. *Dry form.* Salisbury, 4th, 17th, and 20th April, 1898.

Mr. Marshall writes:—"You will notice among the *Terias* that I have pointed out that *T. æthiopica* and *butleri* of Trimen are respectively dry and wet forms of the same species, and thus, taking the synonymy given in your revision, *hapale* must fall as a seasonal form of *senegalensis*. I have not actually proved the case by breeding, but I think you can take my observations on trust now."

Unfortunately Mr. Marshall's dates (upon the specimens forwarded) seem to point to a different conclusion; for he sends wet, intermediate, and dry examples of true *T. hapale*=*æthiopica*, with the signs ♂, ♂, ♂ on their labels, and taken in February, March, and April respectively. Of *T. senegalensis* (=*butleri*) he also sends wet forms taken from February to March and intermediate to dry forms obtained in March and April. Therefore, although *T. floricola* and *T. hapale* may prove to be only variations of the heavily-bordered species, analogous to the narrow-bordered variations of *T. suasa*, there is, at present, no proof that such is the case, and it certainly is not correct to call *T. hapale* the dry form of *T. senegalensis*, because each of these types has its proper seasonal phases.

45. TERIAS SENEGALENSIS Boisd.

Wet form. ♂ ♂, ♀, Salisbury, 16th February, 6th and 16th March, ♀ 3rd April.
Intermediate to dry. Salisbury, 6th and 13th March, and 2nd to 3rd April.

The extreme dry form was not forwarded: it is represented by *T. bisinuata*.

46. TERACOLUS JOHNSTONI Butl.

Intermediate form. ♀, Salisbury, 22nd May, 1898.

47. TERACOLUS PHLEGYAS Butl.

Wet form. ♂, Salisbury, 19th May, 1898.
Dry form. ♂, ♀, Salisbury, 5th and 18th June, 1898.

I should regard the male of Mr. Marshall's dry form as "intermediate": we have a much more pronounced dry-season male.

48. Teracolus antigone Boisd.

Intermediate and dry forms. ♂ ♂, ♀, Salisbury, 19th and 22nd May; 5th and 18th June, 1898.

Mr. Marshall labelled two females of *T. ithonus* (var. *hyperides*) as "*T. phlegetonia*"=*antigone*: one example of the intermediate form is labelled with the wet sign ♂, but was taken on the same day as another marked ♂, and differs from the true wet form in the total absence of the bright lemon-yellow at the base of the primaries on the under surface and the reddish tint of the secondaries; this must, therefore, have been a *lapsus*, for it is not likely that wet, intermediate, and dry forms (in equal condition) would all be flying within less than a week of each other. The single female obtained, though taken on the 5th June, belongs to the intermediate phase.

49. Teracolus ithonus Butl.

Wet form. ♂, Salisbury, 9th March, 1898.

Intermediate. ♀ ♀, Salisbury, 22nd and 29th May, 1898.

Dry form. ♂, Salisbury, 5th June, 1898.

The two males are labelled as *T. achine* (intermediate and dry) and the two females as *T. evagore-phlegetonia* (intermediate and dry). The male obtained in March is, however, the typical wet form of *T. ithonus* (=*hero* ♂); the two females obtained in May are the intermediate form of the same species (=*T. hyperides* ♀); and the male obtained in June is the dry form (=*T. ignifer* ♂).

50. Teracolus omphale Godt.

Intermediate and dry forms. ♂ ♂, ♀ ♀, Salisbury, 19th, 22nd, and 29th May, 5th and 18th June, 1898.

Mr. Marshall labels all the specimens as "*T. pallene*"; he writes as follows:—"I am somewhat in doubt as to the *Teracoli* I have sent you labelled *pallene*, for they are practically indistinguishable from the extreme dry form of *omphale*; yet the wet form is certainly not *omphale*, which I do not remember ever to have seen here, but seems referable to *pallene*. The larva is very similar to, though distinct from, that of *phlegetonia* as observed by me in Natal, but they are not distinguishable in the pupal stage. I obtained some thirty eggs from marked females of ?*pallene*, intending to submit the moulting larvæ to varying conditions in order to ascertain the range of its specific variation: a large number of eggs proved infertile and of the remainder all the larvæ died before they were half-grown—why I know not."

I do not believe that *T. pallene* occurs so far to the south as Mashunaland; but in none of its seasonal forms does it resemble *T. omphale*; indeed it belongs to the same section of the genus as *T. daira*. The wet form of *T. omphale* may vary more than is at present supposed, though our large series shows a considerable range of variation already, but I have not the least doubt that the examples labelled in the present collection "*Teracolus pallene*" are ordinary *T. omphale*.

51. Catopsilia florella Fabr.

♂, ♀, Salisbury, 27th April, 1898.

52. Belenois severina Cram.

♂ ♂, Salisbury, 19th and 30th March.
Labelled as "wet" and "intermediate"; there is, however, a considerably wetter phase of the species. I should therefore consider both specimens as intermediate.

HESPERIIDÆ.

53. Sarangesa synestalmenus Karsch.

Salisbury, 16th March, 2nd and 30th April, 19th May, 1898.
Mr. Marshall labels this *S. motozioides*, but the latter is much nearer to *S. motozi*. If these nearly related insects were arranged in natural sequence they would stand thus:—*S. pertusa*, *S. synestalmenus*, *S. motozi*, *S. motozioides*, *S. eliminata*. I am quite prepared to hear that they are only forms of one species, but the chances are that *S. motozioides* and *S. eliminata* will hold their own and that *S. pertusa* and *synestalmenus* will prove to be slight variations of the dry form of *S. motozi*; the latter seems to be a wet form in Nyasaland.

54. Abantis venosa Trim.

♂, Salisbury, 10th April, 1898.

55. Pyrgus sataspes Trim.

Salisbury, 7th August, 1898.
Labelled "? *diomus*, Hpff. ♂." The latter is quite distinct.

56. Pyrgus dromus Plötz.

♂, Salisbury, 9th March, 1898.

57. Pyrgus spio Linn.

♀, Salisbury, 26th March, 1898.

58. Parosmodes icteria Mab.

♂ ♂, Salisbury, 12th March and 20th April, 1898.

59. Kedestes macomo Trim.

Salisbury, 10th April, 1898.
Mr. Marshall sends this as a new species; but it only differs from typical *K. macomo* in the absence of some of the black spots on the under surface of the secondaries: such differences are hardly likely to have a specific value, but it would be interesting

to see whether the examples obtained in the Mazoe valley were quite constant as regards the number of spots ; in the three examples of *K. macomo* which Mr. Marshall sent us in 1897 they differ in size, though not in number.

60. GEGENES LETTERSTEDTI Wallgr.

♂, Salisbury, 14th May, 1898.

61. GEGENES HOTTENTOTA Latr.

♂ ♀ *in copulâ*, Salisbury, 19th February ; ♂ 14th May, 1898.

It would be interesting to breed this species so as to decide definitely whether the preceding is readily distinct ; until the case is proved it is hard to believe that the large sexual patch on the male *G. hottentota* (=*obumbrata*) is not of specific value.

62. CHAPRA MATHIAS Fabr.

♀, Salisbury, 19th May, 1898.

63. PARNARA DETECTA Trim.

♂ ♂, Salisbury, 12th, 13th, and 30th March ; 9th and 10th April ; ♂, ♀, 5th and 18th June, 1898.

The last two specimens are labelled "*Baoris* sp. nov." ; but, excepting that they have lost two out of the three subapical hyaline dots on the primaries, I see no character by which they could be distinguished from *P. detecta*, and we know that these hyaline dots are exceedingly variable in number.

64. PLATYLESCHES MORITILI Wallgr.

♂ ♂, Salisbury, 20th February, 9th March, 11th April, and 5th June, 1898.

65. RHOPALOCAMPTA PISISTRATUS Fabr.

Salisbury, 18th June, 1898.

Nv5. 1898.

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
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On the Pierine Butterflies of the Genus Catophaga.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

WHEN Wallace described his extensive genus *Tachyris*, based chiefly upon the tuft at the base of the claspers in the males, he seems to have been unaware that Hübner had already proposed three generic names, viz. *Appias*, *Catophaga*, and *Hiposcritia* (recte *Hyposcritia*) for species having this secondary sexual character.

I find that *Appias* (type *A. zelmira*) is undoubtedly generically distinct, the club of the antennæ being broadly spoon-shaped and flattened; but I see no reason for regarding *Catophaga*, *Hiposcritia*, and *Tachyris* (restricted) as more than groups of one genus, differing chiefly in outline of wing and style of coloration. In the case of *Saletara* the structural difference in neuration is inconstant, and consequently only of subgeneric value; I therefore regard this also as a group, though perhaps a little better defined than the others.

Group 1. HYPOSCRITIA, Hübn.

The species of this group have the apex of the primaries usually more or less falcate; the males of the wet-season phase are either cream-coloured or ochraceous on the under surface of the secondaries, rarely (perhaps never) heavily speckled or striated; whereas the dry-season phase of the male more or less resembles a dead leaf in tint on the under surface.

Type of the group *H. pandione*.

1. *Hyposcritia indra.*

Pieris indra, Moore, Cat. Lep. E. I. C. i. p. 74 (1857); P. Z. S. 1857, p. 103, pl. xliv. fig. 5.
Appias mahana, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 48 (1877).
Appias imbecilis, Moore, Journ. As. Soc. Beng. liii. p. 46 (1884).
Tachyris indigis, Weymer, Stett. ent. Zeit. 1886, pl. i. fig. 3, 1887, p. 11.

N.E. India and Burma. ♀, type, B. M.

We have one male labelled "Celebes," but I believe this to be an error; it was received from the Godman and Salvin collection (ex coll. Druce). *H. indra* is the wet-season phase, *H. mahana* dry, *H. imbecilis*=*indigis* an extreme dry phase.

2. *Hyposcritia shiva.*

Hyposcritia shiva, Swinhoe, P. Z. S. 1885, p. 138, pl. ix. figs. 1, 2.

Poona, Manipur, and Burma. ♂, type, B. M.

The female much resembles that sex of *H. leptis* on the upper surface, but the male looks like *H. indra* starved.

3. *Hyposcritia narendra.*

Hyposcritia narendra, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 48 (1877).

Ceylon. B. M.

Var. (?). Nilgiris. B. M.

I have only seen dry forms of this species; the Nilgiri type may possibly be a large form of *H. shiva*, which it resembles almost as closely as it does the Ceylonese species.

4. *Hyposcritia leptis.*

Pieris leptis, Felder, Reise der Nov., Lep. ii. p. 163 (1865).
Tachyris Lucasii, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 381 (1867).

Java. Wet-season phase, B. M. Dry-season phase, coll. Hewitson.

5. *Hyposcritia plana.*

Appias plana, Butler, Trans. Linn. Soc. 2, Zool. i. p. 551 (1879).

Borneo, Sumatra, Malacca, Batchian. Type, B. M.

I have only seen the wet-season phase of this species, and it is possible that no dry phase may exist.

6. *Hyposcritia pandione.*

Hiposcritia pandione, Hübner, Zutr. exot. Schmett. figs. 651, 652 (1832).
Pieris ida (?), Lucas, Rev. et Mag. de Zool. 1852, p. 335.

Java. B. M.

I have only seen a dry phase of this species; but it is quite likely that *H. ida* may be the wet-season form.

7. *Hyposcritia Whiteheadi.*

Appias Whiteheadi, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 5, vol. xx. p. 434 (1887); Rhop. Exot. i., *Pier.* ii. figs. 4, 5 (1889).

Kina Balu. B. M.

8. *Hyposcritia montana.*

Appias montanus, Rothschild, Nov. Zool. iii. p. 325 (1896).

Philippines.

I have not seen this species, but it is said to be related to *H. phœbe.*

9. *Hyposcritia* (?) *ambigua.*

Appias ambigua, Grose-Smith, Nov. Zool. ii. p. 76 (1895).

Wetter, Dili, and Gilolo.

Judging from the description, I imagine that this must be a *Hyposcritia*; but no hint of its affinities is given.

10. *Hyposcritia phœbe.*

Pieris phœbe, Felder, Wien. ent. Monatschr. v. p. 299 (1861); Reise der Nov., Lep. ii. p. 163, pl. xxv. fig. 5 (1865).

Philippines.

Not in the Museum collection.

11. *Hyposcritia lagela.*

Catophaga lagela, F. Moore, P. Z. S. 1878, p. 838.

Tenasserim. Type, B. M.

12. *Hyposcritia lalage.*

Pieris lalage, Doubleday in Gray's Zool. Misc. p. 76 (1842); Doubleday and Hewitson, Gen. Diurn. Lep. pl. vi. fig. 5 (1847).
Pieris durvasa, Moore, Cat. Lep. E. I. C. i. p. 73 (1857); P. Z. S. 1857, p. 103, pl. xliv. fig. 6.
Catophaga pseudolalage, Moore, P. Z. S. 1879, p. 142.
Hyposcritia argyridina, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xvi. p. 340 (1885).

N.E. India to E. Pegu. ♀, type, B. M.

H. durvasa is the extreme wet-season form of the species; *H. lalage* (typical) is also a wet-season phase, probably appearing at the end of the rains; *H. pseudolalage* is a smaller form, probably occurring at the commencement of the dry season; and *H. argyridina* is a true dry-season phase.

13. *Hyposcritia indroides.*

Pieris indroides, Honrath, Berl. ent. Zeitschr. xxxiii. p. 403 (1889).

Perak.

Not in the Museum collection. Weymer says that it is the *H. lalassis* of Grose-Smith, but I cannot agree with him.

14. *Hyposcritia lalassis.*

Appias lalassis, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 5, vol. xx. p. 265 (1887); Rhop. Exot. i., *Pier.* pl. ii. figs. 1–3 (1889).

East Pegu and Burma. 2 ♂, B. M.

Group 2. CATOPHAGA, Hübn.

In this, the typical group, the primaries show little tendency to falcation at apex, the sexes are usually very dissimilar, and the colouring of secondaries below varies seasonally from ochraceous or yellow to pearl whitish.

1. *Catophaga ega.*

Pieris ega, Boisduval, Sp. Gén. Lép. i. p. 536 (1836).
Pieris melania, var. *caledonica*, Felder, Verh. zool.-bot. Ges. Wien, xii. p. 495 (1862).
Pieris psyche, Felder, Reise der Nov., Lep. ii. p. 166 (1865).

Australia to New Caledonia and the Loyalty group. B. M.

This species apparently varies but little, all the specimens which I have seen showing a wet-season character. There are forty-two examples in the Museum series.

2. *Catophaga agave.*

Pieris agave, Felder, Wien. ent. Monatschr. vi. p. 286 (1862).
Tachyris alope, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 372 (1867).
Tachyris mata (?), Kheil, Lep. Ins. Nias, p. 34, pl. iv. fig. 21 (1884).
Tachyris agatha, Staudinger, Iris, 1889, p. 20.

Malacca, Java (Nias ?), Borneo, Philippines. B. M.

Kheil's illustration agrees well with one of our male examples; but in his description he calls the upper-surface coloration hoary greyish, and he states that it belongs to the *T. celestina* group, in which (as is well known) the upper surface is pale chalky bluish. The figure, being a photograph, distinctly proves that "*T. mata*" is not a *Tachyris*, but a male *Catophaga*, and therefore that it is not nearly related to *T. celestina*, the dusky spot on the primaries being placed between veins 3 and 4, not between 4 and 5; and my opinion is that it is merely a feebly marked (perhaps dry-season) discoloured male of *C. agave.* I believe Staudinger's *Tachyris agatha* to be a variety of the female. The *Tachyris maculata* of Grose-Smith (compared with *C. agave*) appears to me to be closely related to *Huphina acrisa*, Boisd.

3. *Catophaga urania.*

♂. *Tachyris urania,* Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 371 (1867).
♀. *Appias Dohertyi,* Rothschild, Deut. ent. Zeit., Lep. v. p. 441, pl. v. fig. 1 (1892).

♂, Celebes (ex coll. Godm. & Salv.). Type, coll. Hewitson.

I have not seen the female of this species, but believe *A. Dohertyi* to represent that sex.

4. *Catophaga melania.*

♀. *Papilio melania,* Fabricius, Syst. Ent. p. 475 (1775).
Appias melania, Butler, Cruise of the 'Curaçoa,' p. 471, pl. xlix. figs. 4, 5 (1873).
♂. *Pieris zoe,* Vollenhoven, Mon. Pier. p. 37, pl. iv. fig. 3 (1865).
♀ (as ♂). *Tachyris asteria,* Miskin, Proc. Linn. Soc. N. S. W. 2, iii. p. 1514 (1888).

Type, ♀, coll. Banks; 2 ♂, 2 ♀, Batchian, colls. Hewitson and B. M.

The secondaries of the female vary much in colouring on the upper surface, but whether the differences are seasonal or not is not known; one of our examples has these wings bright yellow, with the usual broad deep brown borders. I think *T. asteria* is only a variety of this sex.

5. *Catophaga Jacquinotii.*

♂. *Pieris Jacquinotii,* Lucas, Rev. et Mag. de Zool. 1852, p. 326.
♀. *Appias korridana,* Grose-Smith, Novit. Zool. i. p. 335 (1894).

♂, Ceram; ♀, Biak, New Guinea. B. M.

A local representative of *C. melania.*

6. *Catophaga galathea.*

♂. *Pieris galathea,* Felder, Reise der Nov., Lep. ii. p. 165 (1865).
Catophaga Roepstorfii, Moore, Journ. As. Soc. Beng. lii. p. 44 (1884).

♂, Camorta. B. M.

I consider typical *C. galathea* to be the wet- and *C. Roepstorfii* the dry-season phase.

7. *Catophaga sawela.*

Tachyris sawela, Frühstorffer, Soc. Ent. 14, xi. pp. 115, 116 (1896); Berl. ent. Zeitschr. xli. p. 390, pl. ix. fig. 8, ♀ (1897).

♂ ♀, Lombock (*Frühstorffer*). B. M.

8. *Catophaga eurosundana.*

Appias eurosundana, Grose-Smith, Novit. Zool. ii. p. 75 (1895).

Timor, Sambawa, and Wetter.

Said to be nearly related to *C. paula*, which it nearly resembles in both sexes.

9. *Catophaga paula.*

Catophaga paula, Röber, Tijd. Ent. xxxiv. p. 282, xxxv. pl. iv. figs. 1, 2 (1892).

Wetter.

This species seems nearly related to the preceding, but I have not seen examples.

10. *Catophaga paulina.*

♀. *Papilio paulina*, Cramer, Pap. Exot. ii. pl. cx. E, F (1779).
Catophaga leis, Hübner, Zutr. exot. Schmett. figs. 771, 772 (1832).
♂. *Pieris darada*, Feld. Reise der Nov., Lep. ii. p. 166 (1865).
♂ ♀. *Catophaga lankapura*, Moore, P. Z. S. 1879, p. 142.

N.W. and N.E. Provinces of India, Burma, Tonkin, Ceylon, Penang, Java, Borneo. B. M.

I regard *C. lankapura* as the wet-season phase, *C. paulina* intermediate, and *C. leis*=*darada* as the dry-season phase.

11. *Catophaga albina.*

♂. *Pieris albina*, Boisduval, Sp. Gén. Lép. i. p. 480 (1836).
♂. *Pieris Rouxii*, Boisduval, *t. c.* p. 481 (1836).
♀. *Pieris neombo*, Boisduval, *t. c.* p. 539 (1836).
♂. *Pieris galene*, Felder, Reise der Nov., Lep. ii. p. 165 (1865).
♂. *Tachyris albata*, Hopffer, Stett. ent. Zeit. 1874, p. 22.
♀. *Catophaga venusta*, Moore, Lep. Ceylon, i. p. 132, pl. li. fig. 3 (1880–81).

Ceylon, Southern and Eastern India, Pegu, Burma, Tonkin, Philippines, Batchian, Ceram, Bourou, Celebes, Borneo, Penang, Sumatra, Java, Timor-Laut, and Northern Australia. (81 examples.) B. M.

I take the representative of the extreme wet-season phase to be that in which the male has the secondaries and apex of primaries below butter-yellow and the female a bright daffodil-yellow above, with the secondaries and apex of primaries below bright ochreous. Flying with this form *C. neombo* is obtained (an intermediate phase), in which the female is milky white, the male below with the secondaries and apex of primaries sericeous cream-coloured, varying to pale ochreous, and the female with the same parts pearl-white;

the dry form is represented by *C. albina* and *Rouxii*, in which the dusky border of the male primaries is either almost wholly absent or is reduced to a slender abbreviated black marginal line, and the female differs from *C. neombo* in the reduction of the black markings on the upper surface.

Whether *C. albina* is really a distinct species from *C. paulina* can only be finally settled by breeding from the egg; the *C. leis=darada* form runs *C. neombo* rather close in both sexes.

12. *Catophaga Wardii.*

Catophaga Wardii, Moore, Journ. As. Soc. Beng. lii. p. 43 (1884).

Nilgiris, Mysore, Rangoon. B. M.

What I take to be wet-season males of this species resemble females of *C. neombo* in the character of the upper surface. I am not sure that two females without locality standing next to the male of this species in Hewitson's collection do not represent the wet-season phase of the female, the secondaries and apex of primaries below being deep orange; but they may be merely unusually large examples of female *C. lankapura*. I think *C. Wardii* is a good species, distinct from *C. paulina*.

13. *Catophaga cynisca.*

♀. *Tachyris cynisca*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 375 (1867).

Tachyris agatha, Staudinger, Deut. ent. Zeit., Lep. 1889, p. 20.

Bourou. Type, coll. Hewitson.

14. *Catophaga maria.*

Tachyris maria, Semper, Stett. ent. Zeit. 1875, p. 405; Reisen im Arch. Philipp. vol. v. p. 247, pl. xxxix. figs. 1–4 (1891).

Philippines. B. M.

The male has a female character of upper surface.

15. *Catophaga saina.*

Appias saina, Grose-Smith, Novit. Zool. i. p. 336 (1894).

New Guinea.

16. *Catophaga athama.*

♀. *Pieris athama*, Lucas, Rev. et Mag. de Zool. 1852, p. 336; Herrich-Schäffer, Aus. Schmett. ii. fig. 104 (1869).

♂. Above milky white; costal border grey almost to end of cell, thence black-edged to apex and along outer margin to first median branch: under surface with the secondaries and apex of primaries creamy buff, shading into brighter yellow on the borders.

Samoa. 3 ♂, 3 ♀, B. M.

17. *Catophaga Wallacei*, sp. n.

♀. *Tachyris athama*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. pl. ix. fig. 1 (1867).

♂. Chiefly differing from that sex of the preceding species in its more acute primaries.

Mallicollo, New Hebrides, and New Caledonia. B. M.

When describing the female of this species Wallace commented upon its differences from M. Lucas's description and figure, and indeed admitted that the latter was "hardly recognizable" as the same insect. As subsequently evidenced by Herrich-Schäffer's second figure and by three typical females now in the Museum, the illustration criticized by Wallace was an accurate one, and therefore not the same insect as the female figured by himself from New Caledonia.

Group 3. Saletara, Dist.

The species all have acutely triangular wings with tolerably regular external blackish borders and a good deal of yellow of various shades on the under surface; the females vary a good deal in the colouring of the upper surface, the differences being probably seasonal; there seems, however, very little to distinguish the supposed seasonal phases of the males excepting in *S. nigerrima*.

This group was erected into a genus on the ground that in some of the species the males show an extremely short terminal furcation of the third subcostal branch. This character, however, is not only valueless for generic, but for specific differentiation, inasmuch as males of the Malayan representative of *S. panda* sometimes have it well marked and sometimes show no trace of it, proving clearly its unstable, individual, and therefore utterly unreliable nature. As a group, however, it is a natural one, but characters have yet to be discovered which will warrant its being called a distinct genus.

1. *Saletara corinna*.

♂ ♀. *Tachyris corinna*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 377 (1867).

Port Moresby, New Guinea. 6 ♂, 1 ♀, B. M.

Described from Waigiou.

2. *Saletara cycinna.*

♂. *Pieris cycinna*, Hewitson, Exot. Butt. ii., *Pier.* pl. iv. figs. 23, 26 (1861).
♀. *Pieris ocina*, Hewitson, *l. c.* figs. 24, 25 (1861).

Aru Islands. 3 ♂, 2 ♀, B. M.

The upper surface of the female varies from white to yellow.

3. *Saletara liberia.*

Papilio liberia, Cramer, Pap. Exot. iii. pl. ccx. G, H (1782).

Ceram. 7 ♂, 2 ♀, B. M.

4. *Saletara eliada.*

Pieris eliada, Hewitson, Exot. Butt. ii., *Pier.* pl. iv. figs. 27, 28 (1861).

Batchian. 5 ♂, B. M.

5. *Saletara nathalia.*

Pieris nathalia, Felder, Wien. ent. Monatschr. vi. p. 285 (1862).
♀. *Tachyris panthea*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 376 (1867).

Philippines. 12 ♂, 8 ♀, B. M.

6. *Saletara Distanti*, sp. n.

The males sometimes with and sometimes without a terminal furcation of the third subcostal branch of the primaries; the secondaries and sometimes all the wings often tinted with sulphur; the females varying from white to yellow, the outer borders narrower (usually considerably so) than in *S. nathalia*, and the pale areas consequently broader; the under surface in both sexes (excepting in what I take as the dry phase of the female) more suffused with bright ochreous.

Expanse of wings, ♂ 54–64, ♀ 59–64 millim.

Malacca, Singapore, Sumatra, Borneo. 9 ♂, 8 ♀, B. M.

7. *Saletara panda.*

♂. *Pieris panda*, Godart, Enc. Méth. ix. p. 147 (1819).
♀. *Pieris sulphurea*, Vollenhoven, Mon. Pier. p. 32, pl. iv. fig. 4 (1865).

Java. 5 ♂, 4 ♀, B. M.

The males of this species are always more or less suffused with sulphur-yellow, and I have seen no white forms of the female; the outer border in this sex is narrower than in the preceding species, and the ochreous suffusion of the under surface in both sexes is more marked.

8. *Saletara gisco.*

♂. *Appias gisco*, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 6 vol. xv. p. 229 (1895).

Solomon Islands.

Allied to *S. panda*, and said to resemble the female of that species on the upper surface.

9. *Saletara nigerrima.*

♀. *Appias panda*, var. *nigerrima*, Holland, Proc. Bost. Soc. xxv. p. 76, pl. iv. fig. 3 (1891).

♂. *Saletara Schombergi*, Semper, Reisen im Arch. Philipp. vol. v. p. 249 (1891).

♂. *Tachyris aurantiaca*, Staudinger, Deut. ent. Zeit., Lep. vii. p. 352 (1894).

Celebes and Sula Islands. B. M.

Our male from the Celebes is white above and nearly resembles *S. nathalia*. I consider this as probably the male of the wet phase and Dr. Holland's female as belonging to the same phase. *S. Schombergi* from Borneo and *S. aurantiaca* from the Sula Islands probably represent the dry phase, which will doubtless be found in the Celebes also.

[To be continued.]

Dec. 1898

From the ANNALS AND MAGAZINE OF NATURAL HISTORY,
Ser. 7, Vol. ii., *December* 1898.

On the Pierine Butterflies of the Genus Catophaga.

By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

[Concluded from p. 401.]

Group 4. TACHYRIS, Wall.

The largest group in the genus, containing species of tolerably uniform outline, though differing considerably in coloration: the first and most typical species resemble the earlier forms of *Saletara* in the coloration of the males, whilst their females much more nearly resemble those of *Catophaga*; then we meet with a series of bright scarlet or orange insects, gradually changing to species with the upper surface white and brown-bordered. In nearly the whole of the species the dark outer borders on the under surface of the wings are regular in outline, and in most of the white species the seasonal forms seem to be characterized by the width of these borders in the males and the amount of white on the upper surface of the females, the dry-season males having narrower borders and the dry-season females being marked with broad white patches *.

1. *Tachyris celestina.*

Pieris celestina, Boisduval, Voy. de l'Astr., Lép. p. 46 (1832); Lucas, Lep. Exot. pl. xxiii. fig. 1 (1835).
Appias delicata, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ix. p (1882).

Waigiou, Mysol, Aru, Duke of York Island. B. M.

2. *Tachyris clementina.*

Pieris clementina, Felder, Sitzb. Ak. Wiss. Wien, math.-nat. Cl. xl. p. 448 (1860); Reise der Nov., Lep. ii. p. 162, pl. xxv. fig. 6 (1865).
Tachyris adelpha, Röber, Tijd. voor Ent. 1891, p. 281.

Tenimber, Timor-Laut. 2 ♂, 1 ♀, B. M.

3. *Tachyris placidia.*

Papilio placidia, Stoll, Suppl. Cramer, pl. xxviii. figs. 4, 4 *c* (1790).
Tachyris placidia, var. *maculata*, Staudinger, Exot. Schmett. p. 30, pl. xvi. (1884).

Amboina, Ceram, Batchian. B. M.

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* I have not included *Tachyris maculata* of Grose-Smith in this paper as I believe it to be a *Huphina* near to *H. acrisa*.

4. *Tachyris zarinda.*

♂. *Pieris zarinda,* Boisduval, Sp. Gén. Lép. i. p. 486, pl. xviii. fig. 4 (1865).
♀. *Pieris fatima,* Vollenhoven, Tijd. voor Ent. 1866, p. 59, pl. ii. figs. 1, 2.
♀. *Tachyris phestus,* Westwood, Trans. Ent. Soc. 1888, p. 469, pl. xii. fig. 2.

Celebes. B. M.

The female sometimes has orange and sometimes white markings, but whether seasonally or not there is no evidence to show.

5. *Tachyris bouruensis.*

♀. *Tachyris bouruensis,* Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 379 (1867).

Bourou.

Allied to *T. zarinda.* The type should be in Hewitson's collection, but was probably not in good enough condition to induce him to retain it.

6. *Tachyris nebo.*

Appias nebo, Grose-Smith and Kirby, Rhop. Exot., Pier., *Appias,* i. figs. 1, 2 (1894).

Burma.

Nearest to *T. galba*; much more yellow and without discal band on primaries.

7. *Tachyris galba.*

Tachyris galba, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 378 (1867).

Manipur and Silhet. B. M.

8. *Tachyris nero.*

Papilio nero, Fabricius, Ent Syst. iii. 1, p. 153 (1793); Donovan, Ins. Ind. pl. xxxii. fig. 1 (1800).
Pieris thyria, Godart, Enc. Méth. ix. p. 147 (1819); Lucas, Lep. Exot. pl. xxv. fig. 3 (1835).
Pieris figulina, Butler, Ann. & Mag. Nat. Hist. ser. 3, vol. xx. p. 399, pl. viii. fig. 1 (1867).

Burma, Malacca, Penang, Singapore, Java, Sumatra, Borneo. B. M.

This species varies a good deal both in depth of colour above and below and in dusky veining and clouding. *T. thyria* and *T. figulina* are both separable as varieties, but whether they are seasonal forms or mere sports remains to be discovered.

9. *Tachyris domitia.*

Pieris domitia, Felder, Wien. ent. Monatschr. vi. p. 285 (1862); Semper, Reisen im Arch. Phil. v. pl. xl. figs. 1, 2, and 4 (1891).
Pieris zamboanga, Felder, *l. c.*
Pieris asterope, Felder, *l. c.* p. 286 (1862).
Appias mindanensis, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 421 (1883); Semper, Reisen im Arch. Phil. pl. xl. figs. 3, 5 (1891).

Philippines. Twenty-seven examples. B. M.

A male from Borneo in the Hewitson collection agrees with Semper's male of *P. asterope.*

10. *Tachyris palawanica.*

Appias nero, var. *palawanica*, Staudinger, Lep. v. Palawan, p. 22 (1889).

The male varying above from brick-red to bright orange, the veins of primaries, and sometimes the veins on apical area of secondaries, dusky; the apex and outer margin of primaries sometimes with a soft graded brownish border: under surface much more ochraceous, without markings, the centre of primaries more orange than the remainder of the under surface.

Expanse of wings 72–77 millim.

The female varies above from bright orange, through mixed ochreous and tawny, to pure white with dusky basal area and spotted black-brown outer border (as in *T. nero* and allies); below also the wings vary from bright ochreous to ochreous and white commingled or to tawny and ochreous primaries with white subapical streak and pearl-white secondaries clouded with sandy greyish; the ordinary markings (corresponding with those of the upper surface) more or less defined.

Expanse of wings 59–66 millim.

Palawan and Labuan. Ten examples, B. M.

I cannot regard this as a variation of any known species; the primaries of the male are more acute than in *T. domitia* and the under surface unmarked, whilst the female is extremely variable, but has not at all the character of *T. zamboanga* (*T. domitia* ♀), but more nearly resembles *T. figulina* (*T. nero*, var., ♀); its small size and invariably paler colour readily mark it as a different species.

11. *Tachyris flavius.*

Appias flavius, Grose-Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. x. p. 427 (1892); Rhop. Exot. ii., Pier., *Appias*, i. figs. 3–5 (1894).

Taganac Island, N.E. Borneo.

12. *Tachyris ithome.*

Pieris ithome, Felder, Wien. ent. Monatschr. iii. p. 180, pl. iv. fig. 1 (1859).

Celebes. 6 ♂, 1 ♀, B. M.

13. *Tachyris nephele.*

♂. *Pieris nephele*, Hewitson, Exot. Butt. ii., *Pier*. pl. v. fig. 33 (1861)
♀. *Pieris zamora*, Felder, Wien. ent. Monatschr. vi. p. 286 (1862).

Philippines, Celebes. 9 ♂, 6 ♀, B. M.

Local form *Tachyris dilutior.*

Tachyris nephele, var. *dilutior*, Staudinger, Lepid. v. Palawan, p. 21 (1889).

Palawan. 3 ♂, 1 ♀, B. M.

T. nephele is extremely variable as regards the amount of white on the primaries and the width of the blackish outer border of the secondaries; but whether these differences are seasonal we have no data to prove. The Palawan examples show as much white on the primaries of the males as in any of the males of typical *T. nephele*, and the border of the secondaries is slightly narrower than in any, whilst it is more or less abruptly excised at apex.

14. *Tachyris florentia.*

Appias florentia, Grose-Smith and Kirby, Rhop. Exot. ii., Pier *Appias*, i. figs. 6–8 (1894).

Solomon Islands. 3 ♂, 3 ♀, B. M.

We received three pairs of this species from the Godman and Salvin collection.

15. *Tachyris ada.*

Papilio ada, Cramer, Pap. Exot. iv. pl. ccclxiii. C, D (1782).

Amboina. 1 ♂, 2 ♀, B. M.

16. *Tachyris solstitialis*, sp. n.

♂. Above similar to *T. florentia*, but with the dark brown outer border of the primaries more abruptly tapered; below also much like *T. florentia*, but with the dark brown outer border of the secondaries of only half the width, and the bright orange internal triangular patch consequently of twice the size.

Expanse of wings 75 millim.

♀. Above at once distinguishable from *T. florentia* ♀ by the much less lavender tint of the greyish basal suffusion, its almost entire absence from the secondaries, the dentate-sinuate inner edging of the external border, which narrows almost to a point at the external angle of the primaries, and is distinctly narrower than in *T. florentia* on the secondaries on both surfaces.

Expanse of wings 72 millim.

New Ireland (G. & S. coll.). Two pairs, B. M.

If this insect occurred in the same island with *T. florentia*, I should unhesitatingly regard it as the dry-season form of that species.

17. *Tachyris leucosticta*, sp. n.

Intermediate between the preceding and *T. cilla*, nearly resembling *T. solstitialis* above in both sexes, but below both sexes have the subapical spot of the primaries yellow instead of white and the orange on the secondaries considerably more restricted; the width of the outer border appears to vary seasonally, the wet-season form has the outer border of the secondaries decidedly narrower and less regular than in *T. florentia*, whilst the dry-season form is paler in colour and has a slightly narrower border than *T. solstitialis*.

Expanse of wings, ♂ 69–83, ♀ 72 millim.

Bourou, Ceram, Salwatty, Waigiou. 5 ♂, 1 ♀, B. M.

It is probable that this species has been confounded in collections with *T. cilla*.

18. *Tachyris cilla.*

Pieris cilla, Felder, Reise der Nov., Lep. ii. p. 165 (1865).
Tachyris clavis, Wallace, Trans. Ent. Soc. 3, vol. iv. p. 367 (1867).

Ké Island, Normanby Island, Aru. 3 ♂, B. M.

T. clavis is the wet-season form and *T. cilla* the dry. The females of both are in the Hewitson collection: that of *T. clavis* white above and not unlike that sex of *T. florentia*, excepting that the blackish border of the secondaries occupies nearly half the wing-surface; that of *T. cilla* is yellower and resembles that sex of *T. leucosticta* on the upper surface, excepting that it is greyer at base and has the inner edging of the outer borders less sharply defined, whilst below it has a broader outer border to the secondaries and the orange area deeper in colour and much more extended. Hewitson's examples of this species are from Ké, Aru, and New Guinea.

The males of *T. cilla=clavis* are characterized by the fact that the apical border of the primaries completely encloses the subapical spot on the upper surface *, and on the under surface this spot is bright yellow; but these differences alone would not be sufficient to separate it from *T. leucosticta*; the much greater orange area on the under surface of the secondaries (corresponding with that of *T. solstitialis*) distinguishes it at once.

The following species was received in 1874 from the Godeffroy Museum under the name of *T. ada*.

19. *Tachyris ella*, sp. n.

Allied to *T. cilla*, but with the subapical spot white below in the male, as in *T. ada*; it is considerably smaller than the latter in both sexes and the dark border to the secondaries on the under surface of only about half the width; the orange on these wings is very much restricted, even more so than in *T. leucosticta*. On the upper surface the male resembles *T. cilla* in the extension of the dark brown apical area of the primaries so as to enclose the subapical spot; the secondaries, however, have a narrower and very sharply defined dentate-sinuate outer border.

Expanse of wings, ♂ 68, ♀ 62 millim.

Yap, Caroline Islands. ♂ ♀, B. M.

The female has the under surface of the secondaries whiter than in any of the preceding species, the costa and veins towards the base feebly washed with sulphur and the apex clear ochreous.

20. *Tachyris ardens*, sp. n.

Appias andrea (part.), Semper, Reisen im Arch. Phil. v., Rhop. p. 242 (1891).

The Philippine representative of *T. cilla*; invariably distinctly smaller. The primaries with the subapical spot completely enclosed by the blackish apical border as in that species, but the border of the secondaries with strongly dentate-sinuate internal edging; the subapical spot on the under surface of the primaries varies from sulphur- to saffron-yellow, and the secondaries below are either daffodil-yellow, with rather less orange suffusion than in *T. cilla*, or are wholly orange from base to border †. The female nearly resembles in every respect that sex of *T. ella*, but shows less colour on the under surface, the yellow and ochreous being extremely weak.

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* In our male example of *T. leucosticta* from Waigiou the same thing occurs, but to a slightly less prominent extent.

† Whether these are seasonal differences I am not in a position to say.

Expanse of wings, ♂ 68–69, ♀ 59–66 millim.

2 ♂, 4 ♀, Philippines, and ♀, Pelew Island. (Seven examples.) B. M.

This is also in the Hewitson collection; it certainly belongs to the *T. ada* (not *T. hippo* group), both sexes being at once distinguishable from *T. andrea*.

21. *Tachyris Dohertiella*, sp. n.

A very distinct little species; male milk-white, the costa bluish grey, browner on the costal border; apex and outer border occupied by a black-brown band, with acutely dentated inner margin; no subapical spot: secondaries with a rather narrow and tolerably regular black-brown border on a faintly blue-greyish ground from apex to below second median branch; fringe brown: body rather greyer than in any of the preceding species. Primaries with the costal border excepting at base chocolate-brown, continuous with the outer border, which is much broader than above, blackish internally, with much less dentated irregularly sinuated inner margin: secondaries slightly nacreous, with the outer border chocolate-brown and broader than above: body below white.

Expanse of wings 55 millim.

♀. Primaries dark brown, blackish towards apex; two narrow superposed creamy-yellowish streaks beyond the cell; an irregular white patch from just above second median branch to inner margin, its inner edge diffused, its outer edge acutely zigzag: secondaries with a smoke-grey basal patch; a moderately broad dark brown outer border on a pale brownish ground from apex to just beyond second median branch. Primaries below with the pale markings of the upper surface extended; the base and lower two thirds of the discoidal cell whitish: secondaries nacreous, the outer border paler and much wider than above.

Expanse of wings 55 millim.

♂ ♀, Wetter (May 1892, *W. Doherty*). B. M.

Received from the Godman and Salvin collection.

22. *Tachyris timorensis*, sp. n.

♂. Very like *T. lyncida*, but with the black-brown outer borders distinctly broader, less irregular, the subapical spot sometimes reduced to a short narrow streak.

Expanse of wings 54–60 millim.

♀. Very like *T. Dohertiella*, but the creamy streaks beyond the cell of primaries broader and confluent; the outer border of secondaries rather wider and bordered internally by a smoky-brownish suffused belt.

Expanse of wings 54 millim.

3 ♂, 1 ♀, Timor (ex Godman and Salvin coll.). B. M.

23. *Tachyris lyncida.*

Papilio lyncida, Cramer, Pap. Exot. ii. pl. cxxxi. B (1779).
Pieris enyo, Boisduval, Sp. Gén. Lép. i. p. 481 (1836).
Pieris lynceola, Felder, Reise der Nov., Lep. ii. p. 164 (1865).

Java, Bali, Lombock. B. M.

The females vary somewhat as regards the amount of creamy or buffish white on the wings. I suspect that these differences are seasonal.

24. *Tachyris floresiana*, sp. n.

A local representative of *T. lyncida*; the males with the dentated blackish border of primaries not reaching external angle and that of the secondaries reduced almost to a line on the upper surface; on the under surface the outer borders vary a good deal (probably seasonally) in width; the secondaries are more creamy than in *T. lyncida*.

Expanse of wings, ♂ 54–69 millim.

The females above show a much smaller whitish patch than any females of *T. lyncida*.

Expanse of wings, ♀ 61–63 millim.

Flores. Seven examples. B. M.

25. *Tachyris lycaste.*

Pieris lycaste, Felder, Reise der Nov., Lep. ii. p. 164 (1865).

Celebes, 4 ♂, 4 ♀. Eight examples. B. M.

The males of this species nearly resemble those of *T. floresiana*, but the secondaries on the under surface are suffused towards the base with sulphur-yellow (in what I regard as the wet-season form), the females being heavily suffused with smoky brown.

26. *Tachyris formosana.*

Pieris formosana, Wallace, P. Z. S. 1866, p. 356.
Appias inornata, Moore, P. Z. S. 1878, p. 700.

Formosa and Hainan. B. M.

We possess Dr. Moore's type and a similar male from Formosa. It appears to me that the differences between the typical forms are only seasonal; at any rate they have no specific value.

27. *Tachyris andrea.*

Colias andrea, Eschscholtz, Kotzeb. Reise, iii. p. 215, pl. xxiii. *a*, *b* (1821).

Philippines. ♂ ♀, B. M.

The males of this form differ very little from those of *T. hippo*, but the females have a decidedly broader dark outer border to the secondaries; what I regard as probably the dry-season form has also a much purer white ground to the wings on both surfaces.

28. *Tachyris hippo.*

♀. *Papilio hippo*, Cramer, Pap. Exot. iii. pl. cxcv. B, C (1782).
♂. *Pieris eleonora*, Boisduval, Sp. Gén. Lép. i. p. 481 (1836).
♀. *Appias vacans*, Butler, Trans. Ent. Soc. 1870, p. 490; Lep. Exot. p. 90, pl. xxxiv. figs. 5, 6 (1872).
♂. *Appias hippoides*, Moore, Trans. Ent. Soc. 1881, p. 312.
Appias epicœna, Swinhoe, P. Z. S. 1889, p. 398.

N.E. India, Pegu, Burma, Tonkin, Malacca, and Penang. B. M.

Our series is represented by sixty-eight examples, showing every possible gradation between the extreme wet form *T. hippoides* and the extreme dry form *T. epicœna.* The Indian forms have the subapical spot on the under surface of the male primaries bright yellow; in Pegu, Burma, Malacca, and Penang this spot is sometimes bright or pale yellow, but much more frequently quite white.

29. *Tachyris taprobana.*

Appias taprobana, Moore, P. Z. S. 1879, p. 143; Lep. Ceylon, i. pl. lii. figs. 1, 1 *a*, *b*, *c*.
Appias aperta, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xviii. p. 188 (1886).

Ceylon. B. M.

I regard *T. aperta* as the dry form of *T. taprobana.* The species stands between *T. hippo* and *T. enarete*, the costal and subcostal veins on the under surface of the secondaries being blackened, though less prominently than in *T. enarete.*

30. *Tachyris enarete.*

Pieris enarete, Boisduval, Sp. Gén. Lép. i. p. 480 (1836).

Borneo. 15 ♂, 6 ♀. B. M.

31. *Tachyris latifasciata.*

Appias latifasciata, Moore, Trans. Ent. Soc. 1881, p. 312.

Kollar, Nilghiris. 5 ♂. B. M.

32. *Tachyris cardena.*

Pieris cardena, Hewitson, Exot. Butt. ii., *Pier.* pl. iii. figs. 17, 18 (1861).

Borneo, Sumatra, Malacca. 13 ♂, 1 ♀. B. M.

The examples from Malacca may have to be separated, the yellow on the under surface of the secondaries being replaced by a much more restricted abdominal patch of orange.

33. *Tachyris hagar.*

♂. *Pieris hagar,* Vollenhoven, Mon. Pier. p. 38, pl. iv. fig. 6 (1865).

Sumatra.

I think it quite likely that this is only a dry-season form of the preceding species.

34. *Tachyris Hombronii.*

Pieris Hombronii, Lucas, Rev. et Mag. de Zool. 1852, p. 325; ♀, Vollenhoven, Mon. Pier. p. 5, pl. ii. fig. 3 (1865).

Celebes. 3 ♂, 1 ♀. B. M.

This curious and handsome species leads pleasantly from the present group towards *Prioneris,* of which it has the general form and aspect, though without the serrated costa.

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